

The Canadian Medical Association Journal

VOL. II.

OCTOBER, 1912

No. 10

THE THERAPEUTICS OF TO-DAY

By A. D. BLACKADER, M.D.

Professor of Therapeutics, McGill University

Members of the Canadian Medical Association:

Friends in council,—

PERMIT me, at the outset of my remarks, to express my appreciation of the honour involved in the request of your committee that I should deliver the Address in Medicine at this meeting. I accepted the invitation with hesitation, for although I felt it was an honour that comes but once in a lifetime, I was conscious of the associated responsibility, and felt it to be an onerous task to present for your consideration thoughts and facts which should be worthy. I was not unmindful, also, of the many brilliant addresses to which in previous years you have listened. "What can a man do that cometh after the King, even that which hath already been done?"

In my reading some weeks ago, I came across a statement, made by an eminent English surgeon, to the effect that although surgery during the past fifty years had been advancing by leaps and bounds, general medicine had been standing comparatively still, and therapeutics remained nearly as empirical as it was a century ago. The statement revealed such a lack of appreciation of the intense investigations carried on in our medical field, and of the great advances made in therapeutics during this period that it startled me. Nevertheless, I had to admit that the statement was in accordance with a popular impression, and it led me to choose as the subject for our consideration to-day, the present outlook in therapeutics as contrasted with that of the past.

The Address in Medicine delivered in Edmonton, Alberta, at the forty-fifth annual meeting of the Canadian Medical Association.

To heal the sick, to relieve the suffering, and to conserve life and energy, are admitted by all to be the chief ends of our profession, nevertheless it must be a matter of surprise to the laity to note that in the curriculum of our medical schools, the teaching of pure therapeutics, of which pharmacology is only a branch, does not hold, at the present day, the prominent place which, from an *a priori* point of view, it should hold; indeed, in some schools it is altogether displaced, owing to the prominence given to the necessary, but, to some extent, subordinate branches of anatomy, physiology, chemistry, and bacteriology. When I use the term subordinate, I by no means desire to underestimate the vital importance of these subjects, but only to indicate that while as scientific studies they are of great interest and importance to the biologist, and every physician should be a biologist, nevertheless, for us as physicians, these studies must be regarded only as the foundation structures on which the great temple of the healing art, a perfect system of therapeutics, is gradually to be raised. And yet, it is admitted by all that, in the past, in attempting to raise this most complicated structure too rapidly, the mistake was made of not giving sufficient study to these foundational subjects. With but a slight grasp of anatomy, with mystical ideas of physiology, and with an absolute lack of any knowledge of chemistry and bacteriology, and of the causes of disease, our forefathers attempted to solve the mysteries of sickness and death by philosophical imaginings and remedial agents, of which they knew naught of the harm, and little of the good, that could be effected by them. Therapeutics, in these o'den times, has been compared to the gropings of a blind man feeling his way with uncertain steps, now turning this way, now that, stumbling and tumbling, occasionally stopping altogether, but making little definite progress. The thirty or forty centuries of imaginative and empirical medicine, previous to the beginning of the past century, must, from our standpoint, be regarded as all but useless, and characterized by a very slow, irregular, and uncertain development of mere empirical therapeutics. It was a period which at its close had nothing to bequeath to the present but a long list of drugs, the great majority of which are now regarded as useless; a few only had a definite value, and these, owing to the very imperfect knowledge of their exact action, were often used to the disadvantage of the patient; and although physicians of real merit lived during this period, their medical skill was an art and, therefore, personal, and could only to a slight extent be passed down to their successors.

It is a matter for congratulation that about the beginning

of the nineteenth century this blind, unscientific empiricism received shattering blows from two quarters. The revelations made to the profession by Skoda, in Vienna, regarding the natural course of disease and its tendency to spontaneous recovery revealed the hitherto hidden powers of the *vis medicatrix naturæ*, while the gradual development of experimental physiology, pathology and pharmacology slowly and surely laid the foundations of modern medicine, but in so doing destroyed the flimsy structure of therapeutics which had been erected by empiricism.

This period, from the beginning till towards the close of the nineteenth century, has been spoken of as the period of *skepticism* in therapeutics, for it must be acknowledged that during its greater part therapeutics was undoubtedly discredited by almost all the great teachers of internal medicine. Nor is it difficult to find the reason for this. Physicians, aided by the revealing eyes of the microscope, gradually obtained a clearer insight into the complexity of life's processes and into the interaction of the various systems whose harmonious activities constitute a living human being. With the advance, also, of pathological anatomy and an increased knowledge of the many lesions interfering with function and producing derangement of the physiological processes of the body, a deepening sense of the incapacity of drugs to overcome the evils thus wrought slowly overwhelmed the profession. This pessimistic view of the value of drugs is well illustrated by Sainsbury's dialogue between the pathologist and the physician.

"Hail, Professor, the dead salute thee! You were this very moment in my mind and I was wondering."

"Indeed, and the matter of your wonderment?"

"This case which you have sent me, and the physician's faith in drugs."

"Nay, the case came, and had, in fact, long been journeying in your direction, and my endeavour was but to stay the traveller's steps."

"Ah! The apothecary tells me there is a long bill for drugs, digitalis, strophanthus, sparteine, and Heaven knows what more, for I could not outstay the tale of the remedies employed. Friend, what had you in mind? Could you but have seen what was the real task before you? This aortic valve, which you rightly diagnosed to be narrowed, it scarcely admits a thin cedar pencil, and the valves, if you can call them such, fused and thickened as they are, and hard as a piece of Roman mortar: they do not look exactly amenable to treatment; did you think to soften them? And this heart muscle, its fibres stretched and degenerate, what hope was there there? Doubtless you proposed to make new fibres to overcome the destruction. What a commentary upon drug dosing is here!"

"And the other case, which died so unaccountably, you are reported to have said, which lived so unaccountably you might have said, for both kidneys were converted into mere membranous sacs. Again the drug list was not spared, and to what end? Would you have more, look around you, for time, not argument, is wanting. There they stand by shelffuls, long rows of protests against this therapeutic madness, protests which shall last if my art can preserve them. Somewhere, I presume, the physician keeps a conscience, and in time, it is my hope these should bring conviction."

This gradually increasing discredit into which, among thoughtful men, drug therapeutics was slowly sinking, was only to a slight extent relieved by the rapidly increasing knowledge which experimental pharmacology afforded regarding the actual physiological action of drugs. Physicians still mistook symptoms for the actual disease, and because one or two drugs were recognized as possessing a specific curative action, as quinine in malaria and mercury in syphilis, the over-enthusiastic therapist demanded of all his drugs this specific power to cure. Quinine was given in large doses to lower the pyrexia in all forms of infection, and aconite and veratrum were administered to slow the pulse. It was hoped that when the symptoms were overcome, the fever lowered, and the pulse slowed, the disease would be cured. We smile now when we think of such folly, and recognize how futile such attempts must ever be. Towards the close of the last century, however, new hopes were aroused and a new therapy born. The bacteriological investigations of Pasteur penetrated the mysteries of disease, and unfolded its hidden causes; and his successful studies of anthrax infection, and of the immunity conferred upon animals by the prophylactic injection of small amounts of its weakened cultures, afforded to physicians their first insight into the working of the marvellous defensive powers of the living organism, and indicated to the therapist a path along which he might be able to work in cooperation with nature. In this research a long array of master minds has ever since been working. The future alone will be able to estimate clearly how great has been the boon conferred upon humanity by the painstaking investigations of Metchnikoff, Nuttall, Roux, Koch, Behring, Ehrlich, Sir Almroth Wright, Adami, and many others, both in this country and in Europe.

As a result of these investigations we have learned that the natural defensive powers of the system exist in varying amount in the blood of every individual in two forms: as soluble, complex, chemical bodies which are held in solution, and as certain motile white cells, the so-called leucocytes or phagocytes.

Not only do both these curative forces exist preformed in the blood, but they both become immediately augmented when infection takes place; and the ultimate issue, whether in spontaneous recovery or in the death of the tissue or individual, depends upon the degree of this response, and upon the competency of the curative principles evoked to reach and suppress the infecting agents and destroy their poison. With the recognition of these conditions, innumerable attempts were made to utilize this knowledge and

to increase artificially the amount of these curative substances in the blood, both as a means of prophylaxis in individuals exposed to infection, and as a therapeutic agent in those actually infected.

It had early been noted that the inoculations of animals with gradually increasing doses of certain soluble toxins, notably the diphtheria toxin, resulted not only in the development in the blood serum of that animal of a greatly increased tolerance for the poison, but also that if some of that serum were mixed in a test tube with a solution of the toxin, the latter became innocuous and could be injected into a healthy animal without the development of any poisonous symptoms. Then Behring and Roux demonstrated that a strong serum developed in a horse from repeated injections of diphtheria toxin, if injected into a guinea pig shortly after the introduction of a fatal dose of diphtheria toxin, prevented the fatal termination. Shortly after this, the serum was used in man. To those physicians who watched its use for the first time, its marvellous promptness and efficiency must have conveyed a sensation similar to that of witnessing a miracle. And the hope became general that it was merely a question of time before sera would be produced which would prove curative in all infections.

This hope, as we unfortunately know, has not up to the present been fulfilled as completely as was at first expected. Nevertheless, how grateful should the world be to the researches which have already given us the several powerful antitoxic sera which we possess to-day.

The explanation of this partial lack of success lies in the fact that microorganisms affect the body and produce disease in different ways. In some cases, as in diphtheria, it is in the toxins that are produced that the chief danger of the individual lies, and the physician's aim must be to neutralize this poison; in other cases it is the bacteria themselves that appear to work the mischief, and their destruction is all important. Not infrequently these bacteria acquire a considerable potential advantage against their host by withdrawing into situations to which curative agents can obtain only imperfect access, as in localized infections and abscesses; in other instances they obtain a still greater advantage by developing that remarkable state of "fastness" in which they present a most effective resistance to ordinary immunity principles and injurious chemical agents.

It was a great disappointment to our hopes when Sir Almroth Wright's apparently too optimistic statements regarding the opsonins also failed in their general application. To obtain by means of a

culture-growth a knowledge of the precise microorganism that is causing a patient's malady, and to learn by examination of the blood the exact state of the antagonizing forces in his blood cells and serum, and with the knowledge so obtained to coöperate with nature in reënforcing her resistant forces and checking the development of the infecting organism, is a consummation devoutly to be wished. Along this path of coöperation with nature, in my opinion, will yet lie the most brilliant therapy of the future; but there is still an infinitude to be learned, for the mystery surrounding the antibodies has as yet scarcely been fringed.

There is another line along which therapy has made much advance. It is scarcely three decades since Gull and Ord established the relationship between myxœdema, cretinism, and the absence of thyroid secretion. Quickly following this discovery, Murray obtained brilliant therapeutic results by the internal administration of an extract made from the thyroid gland itself. Since then physiologists have devoted much attention to what has been termed the internal secretions, and it is now regarded as certain that special glandular cells, e.g., those of the thyroid and parathyroids, the suprarenals, the pituitary body, the testicles and ovaries, and perhaps the thymus, have the property of secreting active products which play an important part in the functional activities of the body. This study is still in its infancy, but I believe that in time the prophecy of Starling will prove true, and that future investigations of the various hormones of the body will afford us knowledge that may enable us so to modify these functions as to acquire considerable control over the workings of the human body.

With the record of such persevering investigation and brilliant accomplishment in the recent past, and with the well-founded hope that the not distant future has still greater things in store for us, is it right that therapeutics to-day should still be treated with a sneer, and be refused a place among the scientific branches of our profession? The answer, in my opinion, depends upon the stand taken by our profession as a body in discarding the imaginative empiricism of the past, and replacing it by scientific, rational therapeutics.

Rational scientific therapeutics to-day demands that treatment be directed, not to mere symptoms, but to the underlying cause, whether this be of the nature of an infection by a specific microorganism, or of an overactivity or deficiency in some internal secretion, or whether it arise from an interference with normal physiological processes in the body due to an infraction of the laws

of health. It demands from the physician a knowledge of normal structure and function, and of the changes which may be wrought in both by disease, so that he may be able to trace clinical symptoms back to the histologic alterations which produce them, and thus distinguish between the pathological process and its mere symptomatic manifestations.

Scientific therapeutics demands an exact diagnosis, so far as such is possible by instruments of precision and by modern biologic methods, and emphasizes the necessity that this diagnosis be made early. The great importance of time is well illustrated in the case of pulmonary tuberculosis. How much can be done by the physician to check the further progress of the disease if the diagnosis be made promptly, and how futile therapy becomes if the disease be unfortunately labelled as influenza, bronchitis, or malaria, till an extensive invasion has occurred! How important to interpret promptly the early manifestations of rheumatic infection in a child, and immediately to remove, so far as may be practicable, all possible strain from the cardiac tissues by absolute rest in bed, by the avoidance of excitement, by a carefully regulated dietary, and by specific treatment! In the infections of diphtheria, cerebrospinal fever, and poliomyelitis, how the hours count!

Nay more, of how much greater value to our patient might our therapy be, if we could always recognize the stage of *lessened resistance*, and prescribe suitable measures for the restoration of the weakened defences!

Scientific therapeutics to-day demands a knowledge as exact as possible of all the forces which may be utilized by the organism in its struggle against disease, and expects a rational employment of them.

In the first rank among these forces the physician has now learned to place the natural defensive and restorative powers of the system. These powers he must always respect and conserve, and, when necessary, step in and assist; and it must be remembered that in her struggle with disease nature relies not only on her phagocytes and her antigens, "those charmed bullets," as Ehrlich calls them, which strike only the disturbing toxins, but makes use also of other measures of defence. She demands efficient rest for the diseased organ or system and emphasizes its importance by bringing on pain and distress on attempted action. She calls for an increase of cellular activity and, in some cases, induces fever which stimulates the chemical processes in the body, favours the development of the various antibodies, and, if not too high and too prolonged, definitely

assists in the defence against microbic invasion. She forces the elimination of all foreign, irritating, and toxic material, and when necessary she compels other cells or organs to bear the strain in a vicarious action.

All these measures of defence, however, require to be watched carefully, and when excessive to be controlled by the physician, for nature has often a tendency to overdo in her efforts, and in the end the results are not always happy. Joints may stiffen, muscles may degenerate, bodily movements may become depraved; fever and diarrhoea may exhaust; and vicarious action, while relieving the diseased cells may strain others. Not infrequently, also, nature's defensive powers are handicapped by congenital weakness, by the results of previous disease, by the changes due to age, and by environmental conditions, all of which demand the thoughtful attention of the physician. Simple expectant treatment must be, and always will be, *inexcusable negligence*; but the rational, so-called expectant, treatment of the master not infrequently proves to be the best therapeutics: the treatment that, with a clear insight into the pathological processes involved and the course the disease may take, follows the indications of nature and places the natural defences of the organism at their maximum of activity by means of efficient rest, fresh air, suitable dietary, wholesome environment, and a certain amount of psychotherapy, and, when necessary, supplements these forces by the use of hydrotherapy or climatotherapy.

Of the demand for fresh air in the treatment of all forms of disease, it seems scarcely necessary for me to speak. It has been well said that the definite conception of the prophylactic and remedial powers of fresh air, which has gradually developed in recent times, chiefly through the clinical study of pulmonary tuberculosis, should rank as one of the most valuable discoveries achieved in medicine. It is possible, however, that in some cases the "free, fresh, flowing air" treatment of disease may be injudiciously used, or carried to an extreme; for it must be remembered that currents of cold, moist air, and sudden changes in temperature without efficient protection to the body, may, under certain conditions, depress the local and even the systemic powers of resistance and favour an increase in the microbic invasion. Nevertheless, numberless facts point to the conclusion that the cool, moving air of the open operates as a stimulus of high importance, especially in those who breathe efficiently through the nostrils; and for the many, the ceaseless adjustment of the organism to the fluctuation of the physical factors of climate develops an active vasomotor response which greatly promotes the maintenance of health.

On the necessity for the physician carefully to supervise the dietary of all his patients, I desire to insist. I do not propose to discuss whether Chittenden is right when he asks the labourer to supply only the bare necessities that his organism demands, or Hutchison when he claims that the system will work more smoothly when it has enough and to spare, but I do feel like urging the necessity of a very simple, varied dietary for the greater number of our invalids, be they surgical or medical. Our hospital trays often contain too many dishes, some of them distinctly difficult of digestion. The invalid's stomach will digest a few selected articles of nutritious food, when it may be unable to take care of an equal number of varied courses.

The question of the exact foods to be used in our dietaries is gradually assuming new importance, for recent investigations and observations point to a certain amount of specific action as existing in some foods over and above their dynamic and economic values.

While experiments on animals point to the inadequacy of certain dietaries to maintain growth and body weight, even although they contain theoretically a sufficient amount of proteids, fats, carbohydrates, and salts, other observations indicate that certain constituents in food have a greater effect upon growth than that indicated by their caloric value.

Furthermore, there are a number of clinical and experimental observations which show that certain foods have a specific action on some of the hormones in the body. Diet has, in certain cases, a marked effect upon the reaction of animals to iodine compounds, an effect probably exerted largely through an action on the thyroid. The beneficial results not infrequently arising from the addition of oatmeal to the diet in certain cases of diabetes mellitus in man, are not accounted for by any difference in its starch, but appear to be specific, for an oatmeal diet definitely increases the resistant powers of some animals to the poison acetonitrile, an effect attributed in part to the specific action of oatmeal upon thyroid secretion. Other diets notably lessen the resistance of animals to certain other poisons, a variation which may amount to as much as fourfold. Experiments also point to different diets producing very definite effects on the susceptibility of these animals to transplantable tumours, and it is hoped that in a short time it may be possible, by a special arrangement of the dietary, to influence favourably in man the tendency to malignant metastases and recurrences. At the present, however, our knowledge is still too imperfect to permit this department of therapeutics to be effectively utilized.

In recent years, the value of psychotherapy has been, in my opinion, overrated; nevertheless, the many temples of so-called Christian Science, its hundred thousand of votaries, and the many millions of dollars paid into its treasury, constitute an effective demonstration of the influence that the mind can have over some ailments in the body; and scientific therapeutics demands that even this utilizable therapeutic power be not overlooked. Confident hope may undoubtedly act as a bridge to carry a patient over many functional troubles, quieting the nervous system, and strengthening the heart; and what more depressing factor can we, as physicians, encounter than despair, when hope has flown out of the window. The value of suggestion, a procedure by which we develop certain ideas in a mind predisposed to accept them, by imposing them with authority, must be regarded also as a positive therapeutic agent, but one to be employed with caution, and to an extent which will vary greatly with the character and condition of the individual patient.


In every case where psychic therapy is employed, it is important to associate with it the influence exerted by regular occupation, for both mind and body, of a sufficiently interesting character to awaken and maintain the patient's attention, and gradually to develop a healthy interest in things outside of himself, while at the same time over-fatigue is avoided. Morbid thoughts cannot be driven out and kept out, unless healthy thoughts have supplanted them in the patient's mind.

The psycho-analytic methods of Freud and Jung may, I fear, in some cases, prove to be dangerously suggestive, and even when employed with success are to be regarded as only a preliminary procedure.

And now I hear you ask, what about drug therapy? A recent writer, in a humorous vein, asks the question, Why do physicians give drugs? To cure disease? Not always. Sometimes drugs are given because patients demand them, and are not happy until they get them, and often are not happy even then; sometimes they are given to hide ignorance and to mark time, while the physician waits and watches; at other times they are given as a therapeutic experiment; and occasionally, like a gambler on the Stock Exchange, speculating in futures, the physician writes a prescription containing drugs, of which he knows little, in the vain hope that it may chance to bring him in an enhanced reputation. Alas! Alas!

Permit me to label this as a satire, yet containing truth, as the inner consciences of all must admit.

No physician, however, who has observed the definite action of drugs in the pharmacological laboratory will question the power which they place in his hands to stimulate or to depress function. A few drugs have undoubtedly the definite, specific power to cure, but the number of these is so small that they may be counted on the fingers of one hand; mercury, quinine, salicylic acid, salvarsan, and atoxyl; to these we may add, perhaps, colchicum, potassium iodide, and the antiseptics when used externally. All the other drugs in our materia medica are valuable only for their power to influence functional disorder and to relieve disturbing symptoms; but how great the assistance that even in this way is to be obtained! Drugs used with a clear and definite knowledge of their exact sphere of action, may greatly aid nature in maintaining the efficiency of the organism by sustaining the circulation, by strengthening the breathing powers, by assisting elimination, and by stimulating secretion; also, in relieving symptoms, how precious under certain conditions may their action be.

Mere symptomatic therapeutics, however, of whatever character, are rarely permissible, for they tend to mislead by suppressing important symptoms and often by introducing new ones. Such therapy altogether lacks scientific exactness, for it studies complex facts without any consideration of their underlying causes. Symptom treatment should only be employed when the symptom is in itself dangerous, or when it seriously interferes with rest and nutrition. 

It still occasionally happens that we have to use our drugs empirically. The pathologist has not yet revealed to us all the mysteries of disease, and until he illumines the way and points out the underlying cause, the therapist has to fall back on the too often vague experience of the past, which he must then blend with as much science and common sense as practicable.

Personally, however, I have slowly come to the conclusion that as physicians we attempt to use too many drugs of which our knowledge is not sufficiently exact to enable us to use them rationally and scientifically. Added to the long list of old standard drugs whose exact action is often forgotten or disregarded, numberless new drugs, with an unknown or unproven action, have been foisted upon the profession, and as a consequence we have to note a distinct tendency in many physicians to lag behind the scientific attainments of the present, and sluggishly to indulge in an imaginative empiricism that ends in nothing.

I believe it to be better for the physician's credit and for his patient's well being that his materia medica be limited to a com-

paratively small list of drugs, whose proven action he knows, rather than that he should roam over a long list of unknown and sometimes untried drugs, and use them in haphazard, complicated prescriptions.

And in regard to the use of a few of our pharmacopœial drugs, permit me to endorse some statements made by Osborne, of Yale University. There is no proprietary organic iron that will do more good than one of the inorganic salts of the pharmacopœia. Large doses of iron are not needed. Two or three grains of any non-irritating iron salt will supply more iron to the patient's stomach than his system can metabolize in as many days. The expensive, organic iron preparations, which furnish an enormous profit to manufacturing houses, have the only advantage that they supply the iron in very much smaller doses than the physician is accustomed to order, and, therefore, they appear to agree better. The strongest and one of the most irritating iron preparations we can use is the tincture of iron, but one or two drops in a little syrup of lemon will give all the iron required for physiological purposes: even a child will scarcely notice that it is taking anything disagreeable. Digestants are rarely needed. Diastase and pancreatin are destroyed by the acid gastric juice. Calcium glycerophosphate may have a definite value, but, if so, it appears to be the only glycerophosphate that has. All the salts of quinine have a value, but cinchonin and cinchonidin are much weaker, and have no advantage. Tasteless quinines have almost no value. Stimulating and sedative expectorant mixtures are apt to disturb the stomach, and often do more harm than good. In all the salicylic acid preparations before the profession, the action obtained is simply a question of dosage. The proprietary preparations that furnish salicylic acid without its disagreeable effects, are either slowly and imperfectly absorbed or the amount of acid in them is small. If the dose of sodium salicylate were made smaller, the absence of unpleasant symptoms would be the same. In rheumatism, when it is necessary to have a prompt salicylic acid action these preparations either fail or, when pushed, give rise to symptoms similar to those produced by salicylic acid.

Probably the most important problem presented to the physician in every acute or prolonged infection, and after every operation, is how to combat failure of the circulation. It has been recently shown that in a large percentage of cases circulatory failure is chiefly due to a vasomotor paresis most marked in the vessels of the splanchnic area, and it is this paresis, and not the heart muscle, to which treatment must be directed. Fresh, cool

air, the local application of heat and cold, and the employment of vasomotor tonics, or actual vasoconstrictors, are indicated. The group of cardiac stimulants increase for the time the force of the heart's action, but do not permanently strengthen it. They are as a whip to the wearied heart, and have a temporary value only. Camphor, caffein, and strychnin are the best we know at the present. The action of caffein and strychnin is more prolonged than that of camphor, and the effect on the medullary centres more definite. To strengthen the failing musculature of the heart there is no drug that equals digitalis, but we require a carefully standardized preparation made recently from fresh leaves. A reliable strophanthin given intravenously or intramuscularly, is a quickly acting and valuable cardiac tonic, but the preparations of strophanthus itself are of little value when given by the mouth. The vaunted efficacy of the cactus preparations has been thoroughly tested and shown to be a delusion. Alcohol may be of value in certain conditions, but more as a rapidly absorbed food than for any special action as a cardiac tonic.

During the past year, therapeutists have been greatly encouraged by the success which attended Ehrlich's persevering investigations into the possible modifications of therapeutic action by variations in chemical structure. Animated by the belief that pharmacological action is dependent upon an affinity between the special tissues acted upon and the physiologically active principles in the drug, an affinity which determines its distribution in the system and the special cells to be brought under its influence, he demonstrated that these affinities may be altered by variations in chemical structure often of a slight character.

The story of the persistent steadfastness with which he carried on these investigations, even from the time of his student days, is a wonderful record of confident perseverance. Latterly, in his researches to find a drug that would act as a specific in syphilis, thousands of substances had to be tested by chemical and animal experimentation. He tells us that he himself examined over six hundred in this thorough way. All the medical world is aware of his final success and rejoices with him in it. A similar investigation is now being carried on in the Rockefeller Institute, where Flexner is endeavouring to elaborate some modification of urotropin which, while retaining its central formation with its effective germicidal action, may develop a specific affinity for, and a toxic action on, the microorganisms of poliomyelitis.

The old idea of the value of a combination of drugs, not as in olden times giving several at the same time, but using one con-

secutively to the other, has again been revived by Todd, of Montreal, and more recently by Ehrlich, who speaks of it as attacking the enemy from several sides. An antibody or specific drug will operate, he says, with greater effect against an already injured parasite than against one possessing normal resistance, and it may be possible by a fortunate combination of antitoxic serum and specifically acting drug, to effect complete destruction of an invading organism in those cases in which either, acting alone, fails to effect a complete cure. Thus, in trypanosomiasis we may follow a course of atoxyl with one of mercuric perchloride; and in syphilis we may follow our course of mercury with injections of salvarsan. Flexner also calls attention to the possibility that in the near future we may still further increase the effective activity of our drugs by introducing them directly into the affected tissues, where the action of the infecting parasite is most powerful and the resistant forces of the organism at their weakest. Lumbar puncture at the present day enables us to place our antitoxic serum directly into the spinal canal, where the meningococcus works havoc comparatively unchecked.

In time, we may similarly treat the brain, the heart muscle, and perhaps even the lung tissue, by drugs or sera introduced directly into their substance. *Success will come with time.* The subtleties of chemistry will yet provide the physician with many drugs having specific action against many forms of infection, and careful experiments may reveal more direct and definite methods of employing them.

In anticipation of this time there has arisen a laudable effort among synthetic chemists to discover new derivatives from radicles possessing definite therapeutic powers; but it must be remembered that before any such new derivative can be recognized as having a therapeutic value, it must be carefully studied in a pharmacological laboratory, and the reports presented *must be free from secrecy and commercialism.* At the present day numberless commercial houses are thrusting upon the profession an enormous array of new drugs with new names, catchy and therapeutically suggestive, covering much secrecy and, I am sorry to add, much knavery, about their composition.

Of these, a few may have some slight value; the majority, unfortunately, have little or none, and some appear to be distinctly harmful. Of the exact action of these drugs for good or evil we have at present little knowledge, except the statements, which are invariably much prejudiced, of the commercial houses introducing them.

Many of these so-called new drugs, introduced even by reputable houses, have been shown by analysis to be merely a mixture of old and well-known drugs, or to have a chemical composition differing greatly from the one given. It appears to me, therefore, to be of the utmost importance that physicians should accept all unproved statements very cautiously and should still rely almost entirely on the standard, official preparations of which the exact composition and physiological action is well known.

In the detection of the false and the uncovering of fraud, a great work for the profession has been accomplished by the thorough investigation into the composition of these proprietary drugs carried on under the direction of the Council of Pharmacy and Chemistry of the American Medical Association, the results of which are published from time to time in its journal. Any physician desirous of obtaining a correct knowledge of the composition of these nostrums should consult the reports of the chemical laboratory of our sister association to the south of us. Their publication, *New and Non-Official Remedies*, is, I believe, absolutely reliable, and should be in the hands of every physician. Let me also say that I think we should appreciate highly the proposition of the members of this council to institute a critical study of many of the important questions in therapeutics, which still demand investigation. It is proposed to make a compilation of all available published information on each question, and to supply this compilation to every member of our profession who will assist with careful clinical research. Later on they promise to furnish digests and monographs, giving the final results of their investigations, which will supply the physicians with facts upon which some dependence can be placed. Such an effort should have not only our good wishes but also our active coöperation.

Let me, in conclusion, emphasize the great value to the physician and his patients, and to the world generally, of these advances which have taken place during the past few years in rational and scientific therapeutics. During this comparatively brief period the physician has gained a clearer insight into the marvellously effective defensive powers of the organism, and a keener appreciation of the value of the various methods of assisting nature in her struggle with disease. The physician no longer antagonizes her efforts by a fatuous empiricism, nor folds his hands in a know-nothing expectancy, but cautiously, yet confidently, uses all the approved means placed in his hands by modern, scientific medicine, and shuns the many will-of-the-wisps dangled before his eyes in the form of proprietary cure-alls.

DIABETES MELLITUS

By A. J. HODGSON, M.D.

Waukesha, Wisconsin

NO attempt will be made in this paper to give exhaustive consideration to any particular phase of the disease diabetes mellitus. The treatment of that disease is the theme of this paper, and yet to understand the *rationale* of treatment it is necessary to refer more or less briefly to its *ætiology* and pathology.

Ætiology. It used to be taught that diabetes is not a common disease. An experience of twenty years devoted almost exclusively to the treatment of diabetes warrants the statement that the old idea that diabetes mellitus is a rare disease, is no longer tenable. Each year seems to prove the increasing commonness of this serious pathologic state.

What, then, is the cause, not only of the disease itself but of its increasing prevalence? A certain small percentage of cases is due to some severe preëxisting condition, such as irritation of the floor of the fourth ventricle, or syphilitic and malignant diseases of the pancreas. Such cases will not be considered in this paper, as they represent the rare, and not the common, cases. By far the greatest number of cases of diabetes mellitus are those which are due to what may be called errors of metabolism.

There are, it is true, other causes: nervous strain, the excessive use of starches, an hereditary tendency to glycosuria, the so-called gouty diathesis, over-functioning of the thyroid, as in exophthalmic goitre—all seem to play a part in the *ætiology* of diabetes mellitus.

Accepting, then, these various factors as causative elements, it is not difficult to understand why the disease is becoming yearly more common. The nervous stress and strain of American life, the astounding lack of care in eating—not only as to the quantity of food taken but as to the kind, and the rapidity with which it is eaten—these all too common and well-known dietetic and hygienic sins are quite sufficient to explain the greater number of diabetics which statistics and experience, together, prove to exist.

Before leaving the subject of *ætiology*, it seems worth while to mention a possible, but generally overlooked, cause of the disease. I refer to the enormously increased consumption of glucose

or "corn syrup" during the last half-decade. Practically all other sugars used as foods need elaboration in the body before they reach the form of grape sugar (glucose), which is necessary for their assimilation. In the case of commercial glucose, which forms the bulk of most of the syrups now on the market, the substance is already in what may be called the end-product stage. Is it not reasonable to suppose, therefore, that a person who, for some of the reasons given, has a tendency to glycosuria, may find his organism completely overwhelmed by the ingestion of the already elaborated glucose when taken in the form of corn-syrup? In other words, glucose, when taken into the system, can pass directly into the blood stream, instead of taking the lower and more circuitous route through the liver, that the other sugars require. How large an etiologic factor the increased consumption of commercial glucose may be, I cannot state, but I am convinced from much clinical experience that quite a large percentage of these cases is added to the increasing list.

Errors of diet, then, constitute by far the greatest and most important cause of diabetes. A careful study of more than thirteen hundred diabetics treated in the past twenty years convinces me that the majority of patients suffer from the disease because they have ignorantly or carelessly abused their systems with the amount or the kind of food they have eaten or by their method of eating.

Improper insalivation of the food, due to the pernicious habit of "bolting" it, too large an amount, mental concentration, such as thinking deeply, reading or worrying while eating, all tend to produce that disarrangement of metabolism which exhibits itself as diabetes. The use of large amounts of carbohydrates in which the starches are but partly cooked, is, I believe, a fertile cause of the disease. Crackers,—especially the Graham cracker to which popular opinion has given an exaggerated food value,—batter cakes, baking-powder biscuits, corn-bread, waffles, are all examples of the semi-raw starches which should be avoided.

Pathology. It is practically impossible to separate the ætiology of diabetes mellitus from its pathology, for the two factors are so closely related. Yet it seems worth while to consider briefly, under the term "pathology," the prevailing theory regarding the relation of the pancreatic structure to the disease itself.

While it cannot be said to be definitely proved that most cases of diabetes are immediately dependent on the functional insufficiency of the islands of Langerhans, the islet hypothesis is gaining ground with every additional investigation. The work of Bensley¹

on the islet tissue has demonstrated the essential individuality of those important parts of the pancreatic structure, while MacCallum's² observations have seemingly proved that carbohydrate metabolism is dependent on the islands of Langerhans. Weichselbaum's³ careful histologic examinations of the pancreases of nearly two hundred diabetics showed distinct lesions of the islets in every instance. Of course, even though we accept the islet theory in its entirety, it merely means that we look upon the lesions of the islands of Langerhans as the *immediate* cause of the disease. Naturally there must be a cause for the lesions themselves, and that cause, I firmly believe, will be found to be a long-continued toxæmia, brought about, in the vast majority of cases, by gross dietetic errors. We are now making careful investigations on this line in our laboratory.

Treatment. The treatment of practically all non-surgical diseases may be divided into the medicinal, the dietetic, and the hygienic. It is not too radical a statement to say that in diabetes mellitus the last two methods of treatment only are of any avail. If there is a drug which has any particularly beneficial effect in this disease, I do not know of it. That the various drugs which are commonly mentioned in connexion with the treatment of diabetes—arsenic, codein, trypsogen, and cellasin—are not only valueless, but vicious, a rather large personal experience has demonstrated beyond a question. Particularly is the administration of certain proprietary forms of these drugs to be deplored. Arsenic, when prescribed under a trade-marked name and in whatsoever combination, is still arsenic, with all its dangers and limitations, and is just as potent to wreck the digestive system as when prescribed as the simpler and cheaper Fowler's solution. These facts are mentioned because experience shows that far too often patients come for treatment with the codein habit and a severe constipation superimposed on the diabetes, and with ruined digestive apparatus, from the abuse of arsenic prescribed sometimes as official preparations, but more often in a proprietary form.

Let this point be made clear: arsenic and opium may have a limited—very limited—use in the treatment of some cases of diabetes, but in the great majority of cases these drugs simply complicate the situation and make it harder for the patient to realize that his recovery depends essentially on the care with which he follows the prescribed treatment. We must always bear in mind that the public has not yet outgrown the belief that there is something supernatural in drugs, which are popularly supposed to act as specifics for whatever condition they may be prescribed.

The treatment of those diabetics with which this paper deals—that is, those whose condition is due to metabolic errors—resolves itself into four problems:

First. The patient must have his blood and tissues freed as nearly as possible from the sugar and the dangerous acetone bodies with which they are saturated.

Second. The carbohydrate tolerance must be determined, and, when found, must be increased.

Third. A diet must be furnished which will provide energy sufficient to sustain life, but will not increase the ingestion of sugar beyond that which the body can oxidize.

Fourth. Constipation must be prevented or relieved, as that condition increases the toxæmia and lowers the patient's vitality.

Behind these rules or suggestions, there is the essential element of impressing the patient with the nature of his disease and making him realize that the pathologic changes which a long-outraged system shows, cannot be remedied quickly. If a disease exists in which the earnestness and the personal equation of the physician is necessary to success, that disease is diabetes mellitus. Of this point more later.

Experiences of others. Before discussing the treatment of diabetes from a personal standpoint, it will be profitable to refer briefly to the experiences and suggestions of others in the same field.

One of the most widely heralded methods of treatment is the so-called oatmeal diet therapy. It is mentioned only to be condemned, and because of the prominence it has been given in contemporary medical literature. It is a dangerous fad, and both clinical tests and personal experience with those diabetics who have been subjected to this dietary, force the conclusion that the oatmeal will kill many more patients than it will ever cure. Apparently its chief benefit is its nauseating tendency, which prevents the gratifying of the craving appetite ever present in the diabetic. Any patient that is benefited by this method will receive much greater benefit from the ordinary treatment of the trouble. Even its most enthusiastic advocate, Magnus-Levy,⁴ admits that its advantages are chiefly of a negative character; that is, it does good by lessening the amount of meat that is ingested.

Not many months ago Sewall⁵ reported that he had found some diabetics, past middle life, improve greatly when given an infusion of lean meat acidulated with hydrochloric acid. He claimed that metabolism improved and the amount of sugar in the urine became less, when this treatment was followed.

Inulin is said by Strauss⁶ to be of value in the treatment of diabetes. He recommends that the patient be given vegetables such as dandelions, artichokes, etc., which are rich in inulin.

Blum⁷ is of the opinion that the vegetable albumins are more useful to the diabetic than are the meat albumins.

Remarkable results are reported by Cowles⁸ in a case in which he fed the patient from one to six uncooked pancreases every day. Such heroic and unusual treatment was made possible by the fondness of the patient for raw or underdone meat. Marked improvement is said to have followed as long as the raw pancreases were eaten, but the symptoms returned after this diet was abandoned, and the disease finally killed the patient.

Dr. E. I. Spriggs⁹ is entirely correct when he insists that the success of the dietetic treatment of this disease is largely dependent on the way the allowable food-stuffs are presented to the patient. The importance of good cooking and of variety in presentation of food is great enough, in all conscience, to the well man, but to the diabetic these points are vital, and equal to, in importance, the very quality of the food itself.

While the real cause of diabetes is, in the majority of cases, doubtless, due to gross errors in eating, resulting in a long-continued toxæmia, or auto-intoxication, it is probably true that the immediate cause lies in the failure of the pancreas to manufacture its internal secretion. Assuming such to be the case, it has been thought that, by giving the diabetic pancreatic extract, the lacking secretion would be supplied. In practice, however, the use of pancreatic extract has not produced the results that have been hoped. This is probably due to the fact that while the normal pancreas is pouring its secretion all the time, it is impossible to administer enough of the extract to supply more than the smallest fraction of the amount required by the organism. Personally I have never seen any beneficial effects from large doses of the various pancreas extracts on the market. Possibly if we could use the uncooked pancreases, as used by Cowles, we might gain satisfactory results.

Nor has the attempt to isolate a hormone that would act as a stimulator of sugar-oxidation been more successful. Torschbach,¹⁰ who has done splendid work in this direction, admits that the only result of giving this hormone is to produce toxic symptoms in the patient. It is true that the excretion of sugar is temporarily reduced in such cases, but not more than might be explained by the febrile temperature which the administration of the hormone produced.

Leschke¹¹ also has experimented exhaustively with extract of pancreas, but with no better results. In fact, it may be conservatively said that in the present state of our knowledge we are not justified in attempting to treat diabetes by means of pancreatic extracts.

The experiments of Hedon¹² should be mentioned. This investigator had long held that the question of the pancreas producing an internal secretion was not proved. By experimenting, however, with normal and diabetic dogs, Hedon was able to adduce additional testimony in favour of the "internal secretion" hypothesis. He also demonstrated the importance of the liver in diabetes, and it seems not improbable that we may have to modify our views of the cause of this disease. That is, we may be forced to conclude that diabetes, instead of being immediately due to a diminished power of the pancreas to oxidize sugar, is really caused by an actual over-production of sugar in the liver caused by the over-ingestion of the various sugars and starches, or more than the liver is able to properly take care of.

This much is certain, diabetes mellitus is much more easily relieved if the patient comes under treatment soon after the disease first manifests itself, because the vital organs are less seriously affected. When certain cells are destroyed by the presence of this poison for a long period, the patient may be relieved but not cured.

Personal experiences. But to return to personal experiences. The most important principle in the treatment of diabetes is that of limiting the quantity of food that the patient consumes. Control of the amount of food is just as important as control of the kind of food. Nearly every diabetic has a gluttonous appetite, and is apparently as helpless to control it as the average morphine addict is to restrain his craving for the drug.

Many practitioners seem to hold the unfortunate opinion that so long as the quantity of starchy foods is limited, there is no reason for restricting the proteins and fats. *Nothing could be further from the truth.* In the first place, practically every food-stuff is capable of yielding a certain amount of sugar, and to give the patient *carte blanche* as to quantity of food means that no matter how carefully the kinds of food are selected, he is going to take more carbohydrate than his system can handle. But worse even than this, is the enormous tax on the already overstrained emunctories that the ingestion of large amounts of proteins and fats causes. There is little doubt that many cases of diabetic coma

are brought on by the patient eating, not wisely but too well, of articles of diet that in moderation are harmless. So important a factor is the quantity of food, that many mild cases of diabetes will respond to a simple restriction in the amount of food permitted, without reference to the kind. In other words, an anti-diabetic regimen is not always necessary; a mere reduction in the quantity of ordinary food will bring about elimination of the glycosuria.

The fundamental principle in the treatment of diabetes mellitus, is, I am convinced, that of impressing the patient with the idea that he can and must get along on a much smaller quantity of food than usual. He must be impressed with the fact that following an anti-diabetic diet does not mean that he can indulge in proteins and fats *ad libitum*, merely being careful to restrict the carbohydrate intake. A somewhat long and full experience with this class of cases warrants the statement that success or failure in treatment of diabetics rests on this one point—the control of the patient as to the quantity of food he takes and the thoroughness with which it is insalivated.

The question of weighing the food naturally arises in this connexion: theoretically it might seem desirable to govern the intake of food with the accuracy that scales would ensure; practically it is not. Educate your patient to control his appetite by his will and his judgement, rather than to rely on any mechanical appliance; he would cease to use the scale, in all probability, after he left your immediate supervision, and it is much better that he should, while under your charge, form a habit of self-control which will be his salvation. It is no exaggeration to say that the chief benefit the patient derives from treatment is that of being *taught to care* for himself. ■

Drinking water. A mildly alkaline water is best for the diabetic, one with sufficient salts in solution to increase its natural diuretic effect and somewhat neutralize the acid tendency. The patient may drink freely of such a water and, if the diet is properly controlled, the amount he craves will gradually diminish. Distilled water should be prohibited. The patient should be made to understand that drinking a large quantity of water at each meal will not take the place of systematic drinking of water at proper intervals and in the proper quantities.

When the patient first puts himself in your care, his diet should, for a few days, be restricted as nearly as possible to proteins and fats. If, however, the patient shows signs of acidosis or of coma, carbohydrates must be carefully given. The food should

be well cooked and served in as appetizing a form as possible. Fresh vegetables should be added as the sugar in the urine diminishes, but the kind and amount must be carefully watched so as to keep within a permissible limit of four per cent. carbohydrate.

Do not try to base the amount of food allowed on the ordinary caloric necessity of the body, as many writers advise. It is not the amount of food that the body *should* metabolize, that is to be given the patient, but the amount it actually *can* metabolize. If a healthy man, weighing one hundred and fifty pounds, requires twenty-eight hundred calories daily, it does not follow that a diabetic of the same weight should be given food enough to supply that amount of caloric energy. In all probability, the sufferer from diabetes will find it impossible to metabolize even eighteen hundred calories. Why, then, throw on the already overtaxed excretory organs food enough to produce an additional one thousand calories that cannot be utilized by the body?

Constipation. Constipation is an invariable accompaniment of diabetes, and it is one of the hardest of the many complications of this disease to combat successfully. The generally used purgatives, aloes, cascara, calomel, etc., should be avoided, and olive oil and castor oil used instead. At least one daily bowel movement must be assured. If the patient rebels at oil, a palatable emulsion can be made which will answer the same purpose. Equal parts of olive oil, castor oil, and glycerin are emulsified with some high class brand of gum arabic and the preparation flavoured with oil of gaultheria or cassia.

Olive oil, castor oil, glycerin, of each 160·0; gum arabic, 18·0; flavouring (oil of cassia or gaultheria), 0·5.

Exercise. Moderate mental laziness and moderate physical activity is the ideal condition for the diabetic. When night comes he should be wholesomely tired, but not fatigued. Keep the patient in the open air as much as possible, and remember that the ventilation of the sleeping room is of almost as much importance to a diabetic as it is to a consumptive. The skin should be kept in the best possible condition by proper bathing, and if by non-fatiguing exercise a mild degree of perspiration can be induced, the over-worked kidneys will get the benefit of it.

Gluten flours. Gluten flours and gluten foods are, to many physicians, and to still more diabetics, words to conjure with. It is still a widespread fallacy that gluten flours are starch-free flours, and that they are perfectly innocuous to the diabetic. Nothing, unfortunately, is farther from the truth. In Canada, as well as in

the States, a very large proportion of the so-called gluten flours are worse than worthless as diabetic foods. I say worse than worthless because the popular reliance on them makes them more dangerous than ordinary flour. It is a common thing to find patients who have been told to purchase "gluten flour" and have been left wholly to their own devices and desires as to the quantity and quality of the product they should eat.

I give here a list of some of the most widely advertised gluten flours on the American market, with the carbohydrate content, as admitted by the manufacturers:

Jireh Flour.....	73.0 per cent. carbohydrate.
Wilson Brother's 20 per cent. Gluten Flour..	64.1 per cent. carbohydrate.
Brusson Jeune Gluten Bread.....	49.7 per cent. carbohydrate.
Farewell & Rhines Gluten Flour.....	46.0 per cent. carbohydrate.
Hoyt's Gum Gluten.....	43.2 per cent. carbohydrate.

These, I say, are the manufacturers' own figures. Evidently the percentage of carbohydrates is under, rather than over, stated. What can be thought of the morality of selling, as food for diabetics, flours containing from forty to seventy per cent. of carbohydrate? The false sense of security which the term "gluten flour" carries with it has been responsible for thousands of deaths.

For several years I found it either impossible or impracticable to obtain a safe diabetic flour for my patients, and I was forced to devise a bread of my own. The formula has varied from time to time, although the carbohydrate percentage has remained practically the same. At the present time, the formula is:

Unadulterated Soy Bean Flour.....	350.00
Unground Poppy Seed.....	30.00
Eggs.....	250.00
Pure Baking Powder.....	15.00
Water.....	340.00

This batter makes, not bread, in the ordinary sense of the word, but biscuits or crackers which are well baked. They contain about four per cent. of carbohydrates. If they are to be kept for any length of time, they are thoroughly dehydrated until their moisture is reduced to one-fourth of one per cent. These, if placed in tins carefully sealed, will keep practically indefinitely.

The dehydration of these biscuits is desirable for another reason than that of increasing their keeping qualities—that of requiring thorough mastication and insalivation, two essentials in the successful treatment of diabetes. The poppy seeds in the

formula are added more for the purpose of encouraging mastication than for the caloric value of the oil they contain. The flavour of the poppy seed is brought out by thorough chewing, and the palatability of the biscuits is greatly enhanced. I have never seen a diabetic who masticated his food, and one of the first things the physician must impress on his patient is the importance of thoroughly chewing and insalivating the food. Mastication is the first process of metabolism, and one of the most important. It must not be thought that these starch-poor crackers are as pleasant to eat as ordinary bread or biscuits. They are not, and the patient must be told that he cannot hope to get in a diabetic biscuit the palatability of the normal product. Nevertheless, they make a safe and acceptable bread-substitute, and more than this can neither be expected nor obtained.

Treatment in detail. For the first two weeks, then, the patient is to be restricted to a careful anti-diabetic diet, unless the sugar in the urine practically disappears in less than that time—as in many cases it will. When the glycosuria has ceased, the carbohydrates are to be cautiously and gradually increased, always warning the patient of the danger of overeating the *permissible* products. Should the sugar persist, the patient must be put to bed and restricted to a diet of one raw egg and two ounces of olive oil three or four times a day. The free use of the mildly alkaline drinking water previously referred to must be continued.

If this treatment results in any symptoms of acidosis, the amount of oil given must be decreased and small quantities of carbohydrates cautiously given—the patient, of course, remaining in bed. If, in spite of this treatment, symptoms of coma develop, small doses of sodium bicarbonate may be tried, although I am free to admit that I have seldom seen any good results from its use. The soda can be given either by mouth or, better, by rectum. Oral administration, no matter how carefully done, always results in digestive disturbance and should never be kept up for any length of time. Hot packs, to cause free diaphoresis, may be tried as a forlorn hope in impending coma, in connexion with the rectal injections of sodium bicarbonate well diluted.

In most cases, fortunately, the strict diet of the preliminary treatment results in bringing a sugar-free urine. When this happy result is accomplished, small, definite quantities of starchy foods are added to the dietary. It will be found, usually, that the physiologic rest which the strict diet has given the patient, has resulted in an increased tolerance for carbohydrates. Sugar in the blood seems

to establish a vicious circle, and its very presence seems to render the system more impotent to metabolize carbohydrates. By reducing the amount of unchanged sugar in the blood stream, the circle is broken, and the system seems to attain greater capacity for "burning up" starches. The starches must be added with great care and at only one meal a day at first. Breakfast is the meal of election, as metabolism is seemingly more active at that time than at any other. With an increase in tolerance, the starches may be cautiously given at the other meals, in gradually increasing quantities, until sugar again appears in the urine. When this occurs, all starches are withdrawn again for a few days, and then the same process is repeated up to a point just below that at which glycosuria occurs.

Experience has shown that in determining the carbohydrate tolerance, it is best to add the starch in one form only, probably because the system can more readily adjust itself to one kind than to several—even though the total carbohydrate content is the same. The kind of starch will differ with the patient and can only be determined by trial. One man will tolerate oat-starch better than wheat-starch; another will have difficulty in metabolizing both wheat and oat-starch, but will show a tolerance for potato-starch. The patient's peculiarities must be ascertained and the diet governed accordingly.

A patient with a well-developed case of diabetes needs almost as careful watching as does a drug addict. On the subject of eating, the diabetic is mentally unbalanced, not only as regards starches and sugars, but as regards the amount of practically all articles of diet. He is hungry all the time; he suffers from what might be called amylomania.

Again it must be emphasized that the *quantity* of food allowed the sufferer from diabetes is as important as the *kind* of food. Digestion is always impaired in the diabetic. In practically all specimens of diabetic urine examined, large quantities of indican are found, meaning much intestinal putrefaction. It must be evident on a moment's thought that a person with impaired digestion cannot digest as much food as a healthy person. How worse than useless, then, it is to permit the diabetic to eat large quantities of food, even though such foods may be practically starch-free. It has been urged that the diabetic must be given a diet that will furnish so many calories of energy daily. To this I would reply that it is not the amount of food the patient ought, theoretically, to take that should determine his diet, it is the amount he *can actually use*.

Acidosis. We should always carefully test for acetone and diacetic acid, as about fifty per cent. of cases have one form or the other of acidosis; some cases have both forms.

If these acetone bodies increase or accumulate to a sufficient degree, coma appears: hence their great importance. We have found that eight per cent. of cases showing both sugar and acetone bodies may be quickly relieved of glucose. The acetone bodies, however, remain, practically always, accompanied by albumen, which is possibly caused by irritation of the kidneys due to the presence of these products.

Baked potatoes have proved to be the best starch for use in these cases, in just sufficient quantities not to cause a return of glucose.

The diabetic child. In cases of juvenile diabetes, a guarded prognosis should always be given. By this it is not meant that such cases inevitably terminate fatally, but there is no doubt that diabetes in children is an extremely serious disease. No case of this kind can be successfully treated unless the patient is taken out of the charge of its parents and put under the control of a competent, disinterested person—preferably, though not necessarily, a nurse. Parents and relatives do not, and cannot, withstand the child's pleading for sweets and starches. It is practically impossible to make a healthy adult believe that the starches and sugars, which in health are so wholesome and necessary a part of the dietary, are deadly poisons to the diabetic child. Given the proper control of the patient, however, diabetes in children, while always serious, is not necessarily fatal. But new dietetic habits must be drilled into the child, and the treatment is always tedious and slow; nevertheless, given careful supervision over a long period of time, the chances are in favour of recovery.

If diagnosis is made early in the case, the response to treatment is much speedier and more satisfactory. Diabetes in children makes rapid progress—much more rapid than in the adult. This is doubtless due to the more plastic condition of the juvenile tissues. The child has not the resistance nor the vitality possessed by the adult, and the effect of sugar in the blood of the child is much more serious and rapid than in the adult. Unfortunately the diagnosis of diabetes in children is often made late in the disease, when the tissues are more or less overwhelmed by it, the diagnosis being late because of lack of time or care in the treatment of the child.

I have found it both expedient and useful to give all patients a printed diet list, to which special instructions are added. This

contains a list of permissible food-stuffs and some general hints on the hygiene of the diabetic. The list follows:

DIET LIST

SOUPS. *Permitted:* Ox-tail, terrapin, tomato, oyster, clam, consommé of any kind.

Prohibited: Any soup containing flour, rice, barley, or meal of any kind.

FISH, FOWL, AND MEATS. *Permitted:* Fish, only if fresh, it may be cooked in any manner; crabs, lobsters, mussels, scallops, shrimps, clams, caviare; oysters cooked in butter without flour or meal; turtle, fowl or game, roasted, broiled, or fried in butter; roast or broiled (not fried) beef, veal, mutton, or lamb; tongue, calf's liver, sweetbreads, calf's brains, bone marrow, heart; eggs, soft boiled, poached, shirred, scrambled, and as omelette.

Prohibited: Meats or gravies cooked with flour or meal. All canned or salted meats or fish. Fried eggs, fried meat of any kind except that noted. Fresh pork, either as roast or chops. Sausage.

VEGETABLES. *Permitted:* Sea kale (cooked), vegetable marrow (cooked), string beans, asparagus, spinach, lettuce, endive, cucumber, beet greens, celery, rhubarb, water cress, tomatoes, ripe olives, brussels sprouts, cauliflower, onions (cooked), egg plant, pumpkin, kohlrabi, cabbage, leeks, turnip-tops, mushrooms, okra, turnips, salsify, squash, carrots, onions, (fresh), dandelion greens.

Prohibited: Parsnips, beets, potatoes, artichokes, string beans, corn (green or canned), beans, peas, sweet potatoes, lentils, and pickles put up with vinegar.

(N.B.—No vegetables are to be dressed with flour, meal or vinegar. Use lemon juice, French dressing, mayonnaise or olive oil as a substitute for vinegar.)

BREAD. *Prohibited:* All kinds of bread-wheat or rye; cakes, waffles, pancakes, muffins, puddings; all pastry, pies, etc. In fact, anything made with flour. Gluten bread (practically all so-called gluten flour contains as much starch as ordinary flour). Rice, corn meal, oatmeal, cream of wheat, cream of rye, grape-nuts, in fact all cereals, tapioca, sago, arrowroot, hominy, buckwheat, macaroni, spaghetti, vermicelli, Welsh rarebit, patent breakfast foods, crackers, and pop corn.

FRUIT. *Permitted:* Blackberries, cranberries, raspberries, whortleberries, peaches, strawberries, fresh currants, grape fruit, lemons, oranges, gooseberries, pineapple, cherries, mulberries, pears, apples, green gage plums, sour plums, grapes, nectarines, huckleberries, fresh prunes, fresh figs; pomegranates, apricots. These fruits are listed from minimum to maximum in their sugar content.

Prohibited: Dried raisins, dried prunes, dried dates, dried currants, dried figs, bananas, all kinds of melons, persimmons, all preserved fruits, jams, jellies, etc.

DRINKS. *Permitted:* Any good potable water that is mildly alkaline or showing an analysis similar to Waukesha, Mountain Valley or Stafford water; tea (sparingly), cocoa (sparingly), coffee (with moderate amount of cream). Any of the above may be sweetened with one-quarter or one-half gr. tablets of saccharin. Drink six to ten glasses of water each day, with intervals of at least thirty minutes between glasses. Do not drink more than one glass of water at a meal. A glass of hot water upon rising; from three to four glasses between ten a.m. and noon, three or four from three to five p.m., and one on retiring, is a good schedule. Buttermilk should be taken only upon special orders. Sweet milk should never be taken while eating, or shortly after eating meat, vegetables or fruits. Under no circumstances drink milk with flesh. Take lemonade or orangeade sweetened with glycerin.

Prohibited: All alcoholic beverages, especially beer, ale, porter, stout, cider, sweet wines, cordials, champagne, and all mixed drinks. Never drink distilled water for any length of time.

SWEETS. *Prohibited:* Sugar in any form, confectionery, syrup, molasses, honey.

NUTS. *Permitted:* Butter nuts, Brazil nuts, hickory nuts, walnuts, filberts, beech nuts, pecans, English walnuts, pistachios, almonds.

Prohibited: Peanuts, cocoanuts, chestnuts. (Do not eat any old or mouldy nuts.)

CHEESE: *Permitted:* Potted cheese, Edam, Roquefort, New York cheese, grated sap sago.

Prohibited: All other kinds.

JELLIES: *Permitted:* Those made of gelatine and sweetened with saccharin or glycerin, as calf's foot jelly, coffee jelly, etc.

CONDIMENTS. *Permitted:* Pepper and salt, mustard without flour or vinegar.

GENERAL HYGIENE. Get up from the table hungry. Satisfy your judgement and not your appetite. Take moderate exercise daily, but do not over exert yourself to the point of fatigue. Live as uniformly and as free from worry as possible. Have plenty of sleep; therefore, keep reasonable hours. Nervous strain and emotional excitement greatly aggravate your condition; avoid whatever might cause either. Eat nothing between meals except sour fruit, and that in small quantities. At each meal eat less in quantity than would a well person. Live as much as possible in the open air; ventilate your sleeping apartment thoroughly.

I wish to call special attention to the fact that many foods and condiments commonly allowed by dietetists are herein prohibited. Among these are ham, salted or preserved fish; salted meats of any kind, because they are more difficult than fresh meats to metabolize; vinegar, pickles, or any condiment containing acetic acid; claret, Rhine wine, or any wine containing alcohol, because I am convinced that the diabetic can and does synthesize the alcohol and acetic acid found in these products into some of the reducing sugars.

The diabetic patient, child or adult, must be seen daily until the disease shows a marked response to treatment. He should bring a specimen of urine every morning. If any increase in the proportion of glucose is found, he must be painstakingly questioned regarding his actions and diet of the day before. It is astonishing what small things have the power to disturb the metabolic equilibrium of the diabetic. For instance, during the summer months in the little city of Waukesha it has been the custom to have a band concert every Wednesday evening. Every Thursday morning the glucose in the urine of our patients is found to be slightly higher—due, without question, to the mild excitement of mingling with the crowd that attends the band concert. Trivial, you will say. Yes, to the healthy individual, but nothing is trivial in serious illness.

It has been found a useful aid in educating the patient to live right, to have him keep a dietetic diary for a few weeks. Both the kind and the amount of food eaten should be written down. This is an aid to the physician and a useful check on the patient. Special directions can be given more scientifically and it will be found to foster accuracy, both in act and statement, in the patient. Many a diabetic who would, either deliberately or unconsciously, so exaggerate in giving a verbal account of his previous day's dietary as to make his statement worthless, will hesitate to put down an untruth in writing.

A diet list, either written or printed, should be given to every patient; this should contain some general, fundamental rules applicable to all diabetics. In addition, the special directions for the individual patient should be put down in writing and the sick man urged to follow them implicitly. It is surprising how many things, which to the physician seem perfectly evident, are not recognized by the patient, and must be specifically mentioned if they are to be taken into account. It is better that we should dispense platitudes, which, if followed, will help our patients, than that, in taking it for granted that those who come to us know more than they really do, we should fail to do our whole duty by them.

The fullest coöperation of the patient is necessary if favourable results are to be looked for. Absolute obedience to orders should be required and maintained.

A CASE HISTORY. It may be of interest to describe one case of diabetes as typical of the majority of those we see. The following is such a one:

Patient. Swede, aged forty, married, father of five children, a carpenter by trade, consulted Dr. A. J. Ochsner, because his hands and feet were cracked and bleeding. Dr. Ochsner diagnosed the condition as one of diabetes and referred him to me for treatment.

History. He had had the disease, to his knowledge, for about eighteen months when first seen. He had taken codein, and arsenauro in large doses and over a long period; had been permitted to eat all the so-called gluten bread that he wished, and no restriction had been placed on the amount of starch-free foods that he had taken. He had been given a diet slip issued by a proprietary house and permission had been granted to eat any of the foods that the list did not prohibit. Before the diabetic condition developed he had eaten large quantities of partly cooked starches, had bolted his food, and partaken of a badly balanced diet: one containing large amounts of carbohydrate.

Condition when examined. The patient was passing from four to five liters of urine daily, of a specific gravity of 1.046. There was no albumin, and but occasional casts. The skin on the hands and feet was dried, cracked, and bleeding.

Treatment. Twelve glasses (250 c.c. capacity) daily of milky alkaline water was immediately prescribed. All so-called gluten foods were immediately withdrawn, and the starch-poor (five per cent.) biscuits previously described, were substituted. The amount of all food—starch-free and otherwise—was greatly reduced. Castor oil in doses sufficient to overcome the constipation was

given, but no other drugs were used. The glycosuria gradually diminished and finally, after four weeks, entirely disappeared.

Subsequent history. No return of the glycosuria had occurred up to the time of his death from pneumonia eleven years later, during which period he returned for examination five times at intervals of about two years. During this entire time the patient tested his own urine with urinometer regularly, according to instructions that are given during treatment to all adult patients.

SUMMARY. To summarize this somewhat lengthy paper:

1. Diabetes mellitus is not a rare disease.
2. While a small percentage of cases is due to severe organic lesions, most are undoubtedly the result of long continued errors in diet, particularly as to the amount and kind of food eaten.
3. Drugs are of little, if any, use in the treatment of this disease and as a rule should not be used. When drugs are dispensed with, the patient is made to realize the importance of dietetic and hygienic measures.
4. The *amount* of food permitted the diabetic is just as important as the *kind* of food. Even non-starchy foods must be used in strict moderation.
5. Mastication is one of the most important details in the treatment of this disease. Have the patient chew each mouthful of food thoroughly.
6. A mildly alkaline water is the drinking water of choice and it should be used freely. Distilled water should be prohibited.
7. Constipation must be overcome, if necessary by the aid of castor oil and olive oil. Salines and drastic purgatives should be avoided.
8. A moderate mental laziness combined with moderate physical activity is the ideal for the diabetic.
9. If gluten flours are used, they should be most carefully investigated, and their starch content ascertained before they are recommended. Many, if not most, of the gluten flours contain dangerously high percentages of starch.
10. Gluten breads of best quality must be used in moderation.
11. The starch-hunger of the diabetic makes him unreliable when his dietary is under consideration. Keep close watch of him.
12. Diabetes mellitus in children is not necessarily fatal, but a guarded prognosis should always be given.
13. Printed instructions for the patient and the requirement that he keep a dietetic diary are great helps.
14. Coöperation on the part of the patient is essential to successful treatment.

15. The determination and elimination of the acetone bodies (acetone, aceto-acetic acid and β oxybutyric acid) in the urine, is of even greater importance than that of the glucose.

References:—

1. BENSLEY: *Am. Jour. Anat.*, 1911, xii, 298.
2. MACCALLUM: *Johns Hopkins Hosp. Bull.*, 1909, xx, 265.
3. WEICHELBAUM: *Wien. Klin. Woch.*, 1911, xxiv, 153.
4. MAGNUS-LEVY, A.: *Berl. Klin. Woch.*, July 3rd, 1911.
5. SEWALL, H.: *Am. Jour. Med. Sc.*, September, 1911.
6. STRAUSS, H.: *Therap. d. Gegenw.*, August, 1911.
7. BLUM, L.: *Berl. Klin. Woch.*, July 13th, 1911.
8. COWLES, W. N.: *Boston Med. & Surg. Jour.*, June 29th, 1911.
9. SPRIGGS, E. I.: *Lancet*, October 28th, 1911.
10. TORSCHBACH, J.: *Deutsch. Med. Woch.*, November 25th, 1909.
11. LESCHKE, E.: *Arch. f. Anat. u. Physiol.*, 1910, p. 401.
12. HEDON: *Compt. Rend. Soc. Biol.*, July 14th, 1911.

DR. W. H. WALTERS, director of the department of pathology and bacteriology, Evans Institute for Clinical Research, Boston, Massachusetts, writes us that he would be glad to receive information about cases of typhoid fever treated by means of vaccines, from any physician who has had experience, favourable or otherwise, with this form of treatment. A short, blank form for the data required will be sent on request, and due credit will be given in his forthcoming article to each person making a report.

TRAUMATIC ARTHRITIS OF THE KNEE AND ITS EFFECTS

By S. ALWYN SMITH, M.Ch. (Edin. Univ.), F.R.C.S. (Edin).

Orthopædic Surgeon Children's Hospital, Winnipeg, late Orthopædic Assistant, Royal Southern Hospital, Liverpool, England

DURING the last few years great advances have been made in the diagnosis of non-tuberculous chronic diseases, and, as a consequence, also in their treatment. It is only within the last ten or fifteen years that arthrotomy has become a safe procedure, and even now the scepticism of the lay public becomes obvious when one suggests the necessity for exploration of a knee-joint, showing that the laity has a long memory where surgical catastrophies are concerned. Nowadays, however, aseptic technique has reached such a general high-water mark of perfection that the exploration of a knee-joint is undertaken as an every-day occurrence, albeit with a deep sense of responsibility. The natural outcome of operative freedom has been the discovery of several varieties of knee-joint derangement, previously unknown, and this fact, coupled with the tremendous advantage that present-day surgeons possess in good radiograms, as well as by the laboratory study of diseased joints, has enabled us to make a differential diagnosis with a very fair amount of accuracy.

It is my intention to place before you some of the outstanding features of the type of knee-joint that has not received the prominence in literature which is perhaps its due, although Goldthwait and Painter have written most illuminating monographs on the subject. The train of symptoms caused by a variety of changes within the knee-joint has been grouped under the headings of traumatic arthritis, traumatic hydrops, and villous arthritis. This divergence in nomenclature is somewhat misleading, as they all seem to be due to the same causes, and the latter condition seems to insensibly superimpose on the former, if, on the one hand, correct means of treatment be not instituted, or, on the other, metabolic irregularities favour the progress of the trouble.

Read before the Winnipeg Medico-Chirurgical Society, ¹/₄ April, 1912.

Knee-joint strain may arise in several ways, the commonest being due to lateral pressure applied by a slip or fall, the internal lateral ligament being the chief sufferer. The same result may be gradually obtained by the incorrect weight-bearing that occurs in flattened pronated feet. I have also seen the condition described by Freiburg as the "relaxed knee," occurring in fast-growing adolescents, where the relaxation is muscular as well as ligamentous.

For the ætiology of this interesting condition it is necessary to go into a few points regarding the anatomy of the joint. The anterior part of the capsule is formed by the patellar tendon, as the capsule is deficient in the upper and front part of the joint. The aponeurotic expansions which pass on each side to bridge the defects between the anterior and lateral ligaments, for all intents and purposes may be regarded as being capsular in origin, though strengthened by fascia lata and surrounding tendons. On the deep surface of the patellar tendon is the infra-patellar pad of fat. This is a large pad of soft fat, which fills up the interval between the femur, tibia, and patella (Fig. 1), and is triangular in form vertically, although it adapts itself to the various forms which the space takes in the different movements of the joint. The pad is separated from the interior of the joint by a covering of synovial membrane, and from its surface a band of this membrane extends backwards and upwards to the intercondyloid notch of the femur, where it is attached. This band is called the ligamentum mucosum, and it is continuous with this band that there runs the investing layer of synovial membrane to the crucial ligaments. The ligamentum mucosum becomes thinned and threadlike at its femoral attachment, but below this it widens out, and towards the region of the infra-patellar pad, to which it is attached below, it is broad and triangular and presents two free margins which run down to the lateral borders of the patella in its lower portion (Fig. 2). These lateral folds are termed the ligamenta alaria, though of course it is obvious that they are merely folds of synovial membrane, and not true ligaments.

The synovial membrane is very extensive and lines the deep surfaces of the various ligamentous structures which surround the joint, and in addition covers both surfaces of the semilunar cartilages, gives a partial investment to the crucial ligaments, and also gives a tube-like prolongation to the tendon of the popliteus. The intimate connexion of the synovial membrane to the various ligaments is of great importance, as it is due to this fact that ligamentous strain is followed by effusion into the joint. If one studies

the course of the inferior internal articular artery, one finds that it ramifies in and around the internal lateral ligament, and in very close proximity to the synovial membrane; if there is a rupture of the deep fibres of the lateral ligament, hæmorrhage into the synovial membrane is bound to follow the tearing of the arterial twigs. Again, the fact of the semilunar cartilages being covered on each side with synovial membrane and the connexion between the inner meniscus and the internal lateral ligament, accounts for the effusion which occurs if they are damaged. Repeated synovitis due to any cause which brings an effusion into the joint, will produce after effects which will be detrimental to the synovial membrane itself, to the ligaments, by reason of over-stretching, and to the guardian muscles of the joint, owing to changes of disuetude. The changes in the synovial membrane are most marked around the alar ligaments, for various reasons.

As Tenney has pointed out, the ligamentum mucosum is of service in keeping the synovial covering of the infra-patellar pad tense during extension of the joint, thus obviating any tendency of this delicate structure in part being forced in between the femur and tibia. Tenney states that the fibres of the ligamentum mucosum end in the infra-patellar pad, whilst Pouzat avers that they end in the anterior horns of the semilunar cartilages. The writer examined many knee-joints some eighteen months ago in the anatomical department of the University of Liverpool, and dissected a suitable one to find a reason for this divergence of opinion. It was found that the main attachment of the synovial fold was to the infra-patellar pad, but that some few fibres did become continuous with the anterior horns of the semilunar cartilages, especially the external one. However, on pulling the whole mass upwards and backwards, in imitation of the action of the quadriceps tendon, the main force was exerted on the infra-patellar pad, the attachments to the semilunars being so weak as to have a negligible effect on these structures. A case of villous arthritis recently operated upon proved that this is not always the case, as the hypertrophied alar ligament was so intimately connected with the external semilunar as to make it necessary to remove the anterior portion of the latter in addition to the villous mass. Tenney holds that in formalin-hardened bodies the alar ligament cannot be found; in the majority of cases this is true, but one knee that was dissected shows their presence in a joint that, however, cannot be called normal, the folds being so long as to lie over the anterior half of the semilunar cartilages with the joint in full

extension, one tab lying over the internal semilunar cartilage at the junction of the anterior one-third with the posterior two-thirds, the commonest position for cartilage lesions. The interest of this fact, in view of differential diagnosis, is at once apparent.

Let us suppose, then, that, owing to a strain of the knee, there has been an effusion into the joint. There will be stretching of ligaments, and as Griffiths has pointed out, their return to normal is a matter of months rather than weeks, consequently the synovial membrane will become puckered, owing to the close relationship between the two. In addition, owing to the enforced rest, atrophic changes will have occurred in the quadriceps muscle, and, as a result, the ligamentum mucosum will not have its compressive action on the infra-patellar pad that it so ably fulfils with a firmly connecting quadriceps. The infra-patellar pad will now become nipped between the articular surfaces of femur and tibia when the joint is extended, and as a result of this nipping, fresh exudation is produced. A variety of vicious circle is now in full play, and all the necessary elements for the production of the villous arthritis described by Goldthwait are at hand. Should the condition be progressive in nature, due to lack of suitable treatment, further changes may be observed. Hæmorrhages take place into the pad of fat, and these undergo a fibroid change (Fig. 3); these are plainly seen in the accompanying radiograph, and the difference in size between a hypertrophied infra-patellar pad, in a case of traumatic arthritis (Fig. 4), and a normal one (Fig. 5), is seen in the prints taken from cases where the knee-joint had been distended with oxygen, a process which enables us radiographically to see soft parts, both intra- and extra-articular, with great clearness. Owing to frequent injury the synovial membrane becomes elongated into long, finger-like masses simulating villi, and the investing membrane becomes hyperæmic. Microscopically the synovial tags are found to consist of clumps of connective tissue and are richly endowed with blood-vessels. These vessels show signs of perithelial and endothelial hyperplasia, and in some cases show a surrounding mass of small round cells, whereas in others they are completely obliterated by endothelial overgrowth. The villi increase in number as time goes on, and, owing to their friction against one another in movements of the joints, a creaking sensation is elicited on palpation. The irritation of villi rubbing against each other produces an exudation analogous with that due to direct injury by bony pressure. As time goes on degenerative changes take place and tissues of a higher type are replaced by those of a lower variety. The change most commonly

seen is fatty degeneration of the villi, so that the ends of the villi are seen to be made up of distinct lipomata. Sometimes a considerable fold may undergo this change, and here we have the formation of what is known as arborescent lipomata. These masses are usually found to one or other side of the patellar tendon, but occasionally they form in the supra-patellar pouch. A lady whose knee was recently opened for this condition displayed an irregular fatty mass as large as one's thumb, in the former position; this was removed with good result. Sometimes calcareous degeneration takes place, and in the folds of membrane, quite apart from articular cartilage and bone, small cartilaginous and bony masses develop. According to Goldthwait, it is in this manner that certain types of joint "mice" are formed. It is necessary to state that the condition is purely the reaction of tissues to injury, or, in rarer cases, to disease, with consequent retrogressive changes, as a similar process is noticed in synovial tubercle, especially in those forms where joint "mice" develop, and in synovial syphilis in children. From the above remarks it is obvious that the amount of villous formation is relatively proportionate to the duration or frequency of trauma, in cases where injury is the predisposing cause, and that many cases of traumatic arthritis clear up without such processes occurring. It is a difficult problem to solve as to where the division between villous change ends and hypertrophic changes of a rheumatoid nature begin, and the mere fact that many cases show progressive signs of the latter condition superimposing on the former, leaves little room for doubt as to the correlation between the two conditions. Wollenburg states that the two conditions are part and parcel of the same disease, and that both are produced by chronic vascular changes, the causative factor being irritation of toxic or traumatic origin. Many cases, presumably villous in nature, show radiographically the circumferential patellar lipping which is the first sign of hypertrophic osteoid changes.

Having followed, as nearly as one is able, the pathological picture, we must here view the condition from the clinical side. The simple traumatic synovitis that receives treatment on correct lines and clears up, we dismiss at once. We now turn to the chronic strained knee, whose synovial membrane has undergone villous change, and one finds that a divergence of symptoms may manifest themselves, according as to whether the tabs are short or elongated. The common train of symptoms is referable to the former condition, but in the latter instance one is very apt to be misled and to diagnose the lesion in the anterior horns of the semilunar cartilage, as one

can well imagine. One has seen several examples of this mistake cleared up on the operating-table, where removal of an elongated fatty tab in the vicinity of a cartilage has remedied the condition. As will be seen from the accompanying cases, the symptoms in general are not so acute as when a cartilage is damaged; the onset may be somewhat similar if an internal lateral ligament strain is the principal lesion, but there is no subjective sensation of "something giving in the joint," which is invariably complained of in the other condition. Locking of the joint occurs in both types of case, but where the trouble is synovial it is of a transitory nature and can be always remedied by the patient himself. Exudation follows subsequent damage in both cases, but whereas, in the former condition, it occurs with exercise and no apparent lesion, as for example a long walk, in a cartilage case there is always a history of some mechanical indiscretion which leaves its imprint upon the patient's memory. To quote a case of early villous arthritis,—a male patient strained his knee while driving a golf ball off a slippery tee, synovitis with effusion followed. The limb was rested for a fortnight, and after effusion had subsided another game of golf was played, with the result that effusion returned. This state of affairs persisted for five or six weeks, and so he came for advice. The knee was found to be swollen on each side of the infra-patellar tendon, and the quadriceps was much wasted. On palpating the moving knee, a faintly marked, fine crepitation was elicited. There was pain over the internal lateral ligament, but the patient was certain that no slipping had occurred in the joint or that any locking had taken place at the original injury. A diagnosis of thickened infra-patellar pad with early villous formation and a generalized cedematous condition of the synovial membrane was made. Energetic massage to the quadriceps was advised, and a cage splint, a modification of that described by Howard Marsh (Fig. 6), ordered, so contrived as to allow twenty degrees of movement in the joint, but preventing full extension. The nipping of the synovial membrane that had been occurring without much pain during walking exercise, was now prevented, and the massage toned up the quadriceps and obviated an ineffective mucosal ligament. Full recovery followed, and now, two years after the cessation of the treatment, there has been no recurrence of the trouble. It is only necessary to barely refer to the differential diagnosis between synovial and cartilaginous lesions of old standing. In the former, the circum-patellar thickening becomes more evident and the creaking on palpation becomes the most prominent feature. Where the injury

is semilunar in origin, recurrent displacements become progressively easier to produce, although always caused by some slight slip or twist of the foot, which rotates the femur inwards on the tibia and abducts the leg at the knee-joint. Just as the causation becomes easier, so do the after-effects proportionately become less marked, until effusion is most commonly conspicuous by its absence.

Another case is of a lady of thirty-five years, and is of interest in that the two conditions under discussion occurred side by side. The history given was that seven years previously there had been some injury to the knee. Gradual disability came on, which was slight in extent, and consisted of locking, which came on periodically, due to no apparent cause, while walking. This locking was of a transitory nature, but swelling invariably occurred afterwards. Three years ago, after playing golf, the joint became painful and swollen, the pain continuing at night. As a result she was kept in bed for seven weeks. Since that time the limb has never been well, periodic exacerbations having occurred, which culminated a fortnight ago in a definite slipping of something within the joint, owing to a slight fall. On examination, a large, swollen, shapeless knee was found, which apparently contained a little free fluid, but whose synovial membrane was obviously very thick and cedematous. The circumference of the knee round the supra-patellar pouch was two inches in excess of that of the other side. There was inability to fully flex or extend the leg, and apparently the knee never resumed its original size, but remained somewhat pyriform in shape above the lower end of the femur. The x-ray (Fig. 7) shows masses of thickened synovial tissue, especially round the infra-patellar tendon. Operation was advised, as it was surmised that the slipping cartilage would help in keeping up the irritation indefinitely. The joint was opened by a vertical incision on the inner side, and it was found that the internal semilunar was detached from its anterior attachment. The joint was absolutely full of old blood-clot, and there was much fibrous change in the synovial membrane, with an exceptional quantity of villous masses. Tufts of these were floating by pedicles, and it was obvious that many of them were constantly lying between the articular surfaces of the femur and tibia. The detached portion of the cartilage was removed, and, the incision being enlarged, the pendulous masses were clipped away with scissors. The wound was, as usual, sutured in three layers. There was a tendency, after a few weeks, for a slight recurrence of the villous formation, but with energetic massage the limb made a good recovery. I have also seen cases, primarily



FIG. 1.



FIG. 2.



FIG. 3.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

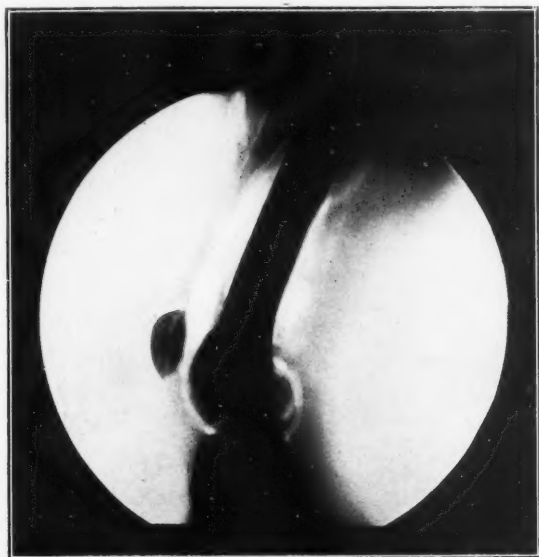


FIG. 4.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

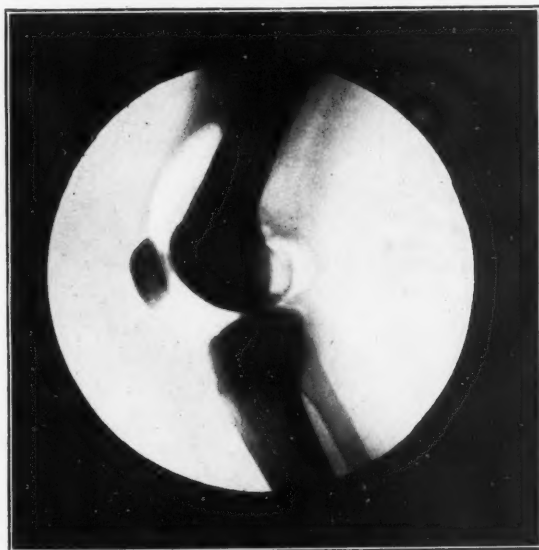


FIG. 5.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

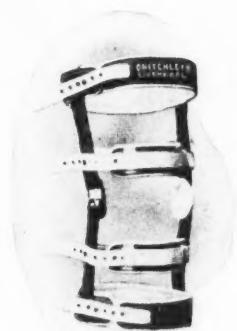


FIG. 6.



FIG. 7.—Mr. Robert Jones's case radiographed by S. Alwyn Smith.

semilunar in origin, become markedly rheumatoid, owing to repeated traumatism. Where operative treatment is for any reason contra-indicated, it is of great utility to apply a cage-splint (Fig. 6) so arranged that the hinge joint locks at thirty degrees from full extension, and giving in the average case about sixty degrees of movement. This splint should be worn day and night, and its object is to prevent the nipping of the infra-patellar pad previously referred to. Combined with the use of the cage-splint, firm and energetic massage to the quadriceps should be practised. In a varying period of time, generally a matter of eight to twelve weeks, more liberty may be given, that is, the hinge can be arranged to lock at twenty or fifteen degrees short of full extension, and if no tendency to exacerbations of symptoms occurs, the splint can be discarded in another month. One has seen very good results follow the use of this mechanical treatment, but one cannot too emphatically reiterate the necessity for keeping the quadriceps muscle in good condition. Occasional counter-irritation—effectively given by means of the actual cautery—at the region of the fat pad, is of use. A long course of hot air treatment by means of the electric oven gives excellent results in many cases by improving the tonicity of the part. The question of operative interference, by clipping off the villous tags, is one which needs consideration, but it is advantageous to reserve it for those cases where by joint-locking we infer that there are well-marked pendulous masses present, or that a lipoma arborescens has formed. Where rheumatoid osteophytic changes have occurred, paring and chiselling operations in the hands of Robert Jones have given poor results, and so have been discontinued in his clinic.

MEDICINE AND ENGLISH LITERATURE

BY EDMUND KEMPER BROADUS, PH.D.

University of Alberta

THE last few years have afforded several reminders that English literature takes a lively, if not always a complimentary, interest in the medical profession.

The medical faddists of Shaw's "Doctor's Dilemma," who run the gamut of panaceas from antitoxin three times a day to green-gages half an hour before lunch, constitute only the mildest of satires on the profession compared to the bludgeonings of Shaw's extravagant preface; and now Mr. Robert Herrick in his latest novel, "The Healer," rises to the attack, with an indictment and a solution which are, after all, nothing more than Shaw's preface illustrated in narrative. That all physicians, high as well as low, are in some degrees quacks and hypocrites, and that the only hope of redemption for the profession lies in the abolition of private fees,—this is what Mr. Shaw has already told us to the tune of forty or fifty pages. The promptness with which Mr. Shaw's complaint has been echoed and reiterated on this side of the Atlantic gives food for thought to the philosopher, but it may well serve also to remind the student of literature of the ancient grudge of literature against medicine.

Long before Molière set the fashion, comedy was wont to burlesque the follies and satirize the foibles of the physician. In the mediæval St. George folk-plays, the doctor is already a ridiculous figure, riding in, sometimes on a hobby-horse, sometimes on the back of one of his patients, and while he boasts of his skill, bringing St. George back to life by exhibiting a bolus. Elizabethan drama constantly fell foul of him. The Doctor of Physike, who is called in to prescribe for the madness of Lady Macbeth, has at least the merit of sincerity.

"This disease is beyond my practice. . . .

More needs she the divine than the physician,"

but ordinarily Shakespeare's physicians are Dr. Caiuses, good only for "the abusing of God's patience and the King's English." Ben Jonson never lets slip the opportunity to satirize the profession.

Volpone's indictment of the physician anticipates in all essential particulars the bill of complaints which Shaw draws up as a preface to the "Doctor's Dilemma." "He has no faith in physic," says Mosca of his master, Volpone:

"He does think
Most of your doctors are the greatest danger
And worse disease to escape. . . .
No sir, nor their fees
He cannot brook: he says they flay a man
Before they kill him. . . .
And then they do it by experiment
For which the law not only doth absolve
But gives them great reward: and he is loth
To hire his death so."

But Jonson as the professional exploiter of human follies is naturally even more concerned with the quack and the magician. The latter, indeed, if we are to accept comedy as an image of the times, found himself more on the road to preferment than the legitimate physician.

"He's a rare physician, do him right," says Sir Epicure Mammon,
"An excellent Paracelsian, and has done
Strange cures with mineral physic. He deals all
With spirits, he; He will not hear a word
Of Galen, or his tedious recipes."

Similarly, Marlowe's Faustus, although through his prescriptions whole cities have already

"Escaped the plague
And thousand desperate maladies been eased,"

feels that he is still "but Faustus and a man." If "this profession were to be esteemed," then must the physician turn magician, and legitimate therapeutics give place to miracles.

It would almost seem, indeed, that the emphasis of the professional medical man upon incantations and natural magic left the field of legitimate healing open to the heroines of romance. "For I tell thee, Tristan, this wound shall be thy death, for the sword was poisoned with a deadly poison, and no leech nor leechcraft can heal thee, saving only my sister Iseult, the Queen of Ireland. She knoweth the virtues of all plants, and many secrets of healing; she can heal thee, but none other on earth can."

Nor were the fictitious royalties of romance the only rivals of

the doctors: for it will be remembered that the English kings healed for the "King's evil" from the days of Edward the Confessor to the time when Queen Anne "touched" the future great cham of literature, Samuel Johnson.

Meanwhile the devotees of surgery, to whom the privileges of magic were denied, eked out their practice with humbler expedients. In the medical schools of the middle ages the actual handling of surgery was frequently relegated to the village barber, who was usually village dentist and village musician as well. The teeth which he had drawn were not infrequently hung up at the window on lute-strings; the parti-coloured barber's pole was painted after the fashion of a surgeon's bandage, and outside of the door, to indicate his double function of barber and surgeon, hung "a copper basin on a prickant spear." "Yonder his mansion is," says Mine Host in "The Knight of the Burning Pestle," as he directs Ralph to the den of the "giant Barbaroso";

"Lo, where the spear and copper basin are!
Behold that string on which hangs many a tooth
Drawn from the gentle jaw of wandering knights."

The cutbeards of Elizabethan drama are ready alike with razor, scalpel, or physic, and are also the stock intermediaries of intrigue. Even in the eighteenth century, medicine had strange bedfellows. Partridge, the almanac-maker, who describes himself as an "honest physician," was a cobbler by trade, and is characterized, in a pamphlet written in his behalf probably by the dramatist, as "an eminent practitioner in leather, physic, and astrology."

The eighteenth century with its fresh heritage from the great discovery of Harvey, with such men as Sydenham and Sir Thomas Browne to look back to, and with its own Arbuthnots, and Garths, and Akensides handing on the medical tradition of honourable accomplishment in letters, might well have portrayed the physician with respect to its creative literature; but comedy found the burlesque doctor made to its hand by Molière, accepted the stage quack as unquestioningly as it had already accepted the *miles gloriosus*, and in such comedies as Fielding's "Mock Doctor," and Cobb's "Doctor and Apothecary," out-Molière'd the master *in facietia* at the physician's expense; and prose fiction contented itself with the Dr. Slops, the Partridges, and the low quacks and imposters who infest the pages of Smollett.

Satirical and burlesque pictures of the physician abound in nineteenth century fiction; but Charles Reade is the only one who

seems, like Molière, to have singled them out as the special object of malevolence. His portraits are too long for transcription, but the phrases in which he hits off the foibles of the profession are often neatly turned and quotable,—as in his characterization of one doctor as a “mellifluous pleonast, who oiled his prescriptions with fresh polysyllables.” In the novels of Dickens the general practitioner, even when he assumes the venerable dignity of Doctor Manette in “*The Tale of Two Cities*,” carries his profession only as a sort of shadowy accessory. I fancy more than one physician in reading the novel must have smiled at the idea that Doctor Manette, after being rescued, aged and mentally clouded, from the oblivion of the Bastille, should have been able to “earn as much as he wanted” by the practice of his profession. The surgeon, on the other hand, usually brings his profession with him into the centre of the stage, but he remains a sawbones, a comic and usually disreputable figure, of whom Bob Sawyer may stand as typical.

It is not surprising that in Dickens, with his vast canvasses, physicians are fairly numerous; but in Thackeray medicine is almost completely crowded out by the other two learned professions. One is inclined to wonder a bit at this, too, for several of Thackeray’s warmest friendships were with physicians, to one of whom “Pendennis” is dedicated in words which glow with the gratitude of a convalescent recently rescued from death. And yet the practitioner in the pages of Thackeray concerning whom the present writer at least has the most lively memories, is one from the pages of that very novel, one who was most anxious to bury his professional past in oblivion, and be addressed not as Doctor, but as Squire. And this ancestral Pendennis, ex-apothecary, ex-doctor, conveniently sketched in with the kindly condescension which Thackeray sometimes allowed himself, and quite forgotten when the author gets down to the serious business of the novel, is typical of the other physicians in Thackeray. Some of them, it is true, are on a much more assured social footing than the former dispenser of salts and plasters, but all of them are there only to serve their casual turn, and the author has other game afoot than to develop these occasional functionaries into finished portraits.

Of the great Victorian novelists, it remained for George Eliot to give the profession a central place in one of her novels, and to produce a character which would be convincing alike to the physician and the layman. Lydgate, says Dr. S. Weir Mitchell, “is all over the physician, his manner, his sentiments, his modes of thought, but he stands alone in fiction.” Lydgate is a wonderful

picture, not merely because his idealism and devotion, under adverse conditions, to the literature of his profession strike a responsive chord in the breast of such a physician as Dr. Mitchell, but because these traits are so melted into Lydgate's daily life that they are the man; and the study of his degeneration is precisely the study of the deterioration of his professional self under a barren and unsympathetic environment.

More recent fiction has been productive of many studies of the profession, such as Miss Jewett's "The Country Doctor," and W. D. Howells' "Dr. Breen's Practice." The last decade or two has seen also the emergence of the woman-physician as a type in fiction, but there has been nothing so comprehensive or so convincing as Lydgate since "Middlemarch" came from the press. When some novelist appears worthy to take up the pen which George Eliot laid down, an opportunity awaits him in a territory through which Kipling has blazed the way in "Marklake Witches,"—the presentation in fiction of some of the great physicians of former times, in the full stress of their epochal lives. What a "story" there would be, for example, in the career of Harvey, son of a Kentish yeoman, adviser and physician of royalty, standing in the transition moment between ancient and modern medicine, declaring his discovery of the circulation of the blood in words that have not lost their fine ring throughout the centuries: "But what remains to be said upon the quantity and source of the blood which thus passes, is of a character so novel and unheard of that I not only fear injury to myself from the envy of a few, but I tremble lest I have mankind at large for my enemies, so much doth wont and custom become a second nature. Doctrine once sown strikes deep its root, and respect for antiquity influences all men. Still the die is cast, and my trust is in my love of truth and the candour of cultivated minds."

How the historical imagination, like a highly sensitized plate, could catch and register the receding faces of that throng of sixteenth century quacks and impostors, panderers to the ancient mystery of medicine, as they peer over the line drawn by this demonstrator of the fundamental principle on which all modern knowledge of the human body rests! And with what heightened satisfaction would the reader of such a story detect in the literature of Harvey's own day the ferment of interest on the subject, which could induce the poet Donne, for example, to introduce into one of his elegiac poems the query:

"Know'st thou how blood, which to the heart doth flow,
Doth from one ventricle to the other go?"

or encourage Harvey's fellow-Kentishman and fellow-Cambridge student, Phineas Fletcher, to make the conception of the human body as an island bounded by streams of blood the theme of the long Spenserian poem, "The Purple Island"!

Or what a theme in Jenner's discovery of vaccination, with all the superstitious follies of the riotous crowds, who opposed a blessing so disguised; and with poor little eight-year old James Phipps preserved to history as the first subject of experiment!

And what possibilities for historical fiction, too, in some of the men whom a more ephemeral brilliance has kept in memory—Arbuthnot and his circle of wits and literary geniuses; Heberden, Dr. Johnson's "Ultimus Romanorum"; Dr. John Brown, of Edinburgh, the author of the one-time famous "Brunonian theory"; or that other Dr. John Brown to whom the world is indebted for "Rab and His Friends"; or Mark Akenside, butcher's son, poet, and physician, distinguished alike for the richness of his language and the meanness of his character, and pilloried already in the pages of "Peregrine Pickle."

Studies such as these would go far towards recompensing medicine for the scurvy treatment which literature has been disposed to accord it; but the debt of literature to medicine is too various to be readily repaid. Not the least of these obligations is the matter of vocabulary.

The essence of literature has always been the analysis and interpretation of character; and English literature, prior to the seventeenth century, borrowed from contemporary medicine a mode of thought and a system of terminology which became the universal literary language of characterization. The doctrine of humours, which Hippocrates had fashioned and which Galen had developed by means of the four elements, hot, cold, wet, and dry, established itself in English poetry from Chaucer to Milton as the regular means of portrayal of disposition, temperament, and mood. In the eighteenth century, the melancholy humour of Shakespeare's day gave place to the spleen—a general medico-literary term for the vapours, the blues—in short, for all those combinations of physical and mental discomfort which proceed from a disordered stomach and a perverted imagination. Pope's picture of the Cave of Spleen, where the Goddess

. . . . "Sighs forever on her pensive bed,
Pain at her side and Megrim at her head,"

is properly balanced with Matthew Green's famous prescription for the cure of the disease—

"Fling but a stone, the giant dies.
Laugh and be well."

Or again, the word nerve, after supplying the sixteenth and seventeenth centuries with the adjective nervous, meaning sinewy, and the eighteenth and nineteenth centuries with the same adjective, meaning easily excitable, and therefore weak, has completed the cycle by becoming the modern slang synonym for impertinence.

Meanwhile, through the crystallization of metaphors, we retain memorials of the ancient fallacies concerning the human body. "My reins," it is said in Proverbs, "shall rejoice when thy lips speak right things." "Thou thing of no bowels," says Thersites to Ajax in Shakespeare's "Troilus and Cressida." "Joseph made haste," we are told in Genesis, "for his bowels did yearn upon his brother"; and we find the quaint and witty divine, Thomas Fuller, describing "Bloody Bonner, that corpulent tyrant" as "full of guts but empty of bowels." We still "learn by heart," though science has long since given over the idea that the heart is the seat of memory. The same organ rests secure as the seat of passion, though Phineas Fletcher, with classic precedent, tried to make out a case for the liver as the throne of mild affection, and Charles Lamb, in one of his most delicious passages, has at least recognized the existence of other claimants for the honour. "What authority we have," says Elia, "in history or mythology for placing the headquarters and metropolis of god Cupid in this anatomical seat rather than in any other is not very clear; but we have got it, and it will serve as well as any other. Else we might easily imagine, upon some other system which might have prevailed for anything which our pathology knows to the contrary, a lover addressing his mistress, in perfect simplicity of feeling, 'Madam, my *liver* and fortunes are entirely at your disposal,' or putting a delicate question, 'Amanda, have you a midriff to bestow?' But custom has settled these things, and awarded the seat of sentiment to the aforesaid triangle, while its less fortunate neighbours wait at animal and anatomical distance."

Finally we have the Elizabethan, John Lyly, summing up a whole anatomy of misfits in a single sentence—"How say you, Favilla, is not love a lurcher [thief] that taketh men's stomachs away that they cannot eat, their spleen that they cannot laugh, their hearts that they cannot fight, their eyes that they cannot sleep, and leaveth nothing but livers to make nothing but lovers?"

But if English literature has incurred chance obligations in the way of borrowings from the vocabulary of the doctors, it is under a

far more considerable obligation from the direct literary contributions of the doctors themselves. From generation to generation the profession has included many who, like John Brown's ideal physician, "live in the world of letters as a freeholder," and believe that "their profession and their patients need not suffer, though their *horæ subsecivæ* are devoted occasionally to miscellaneous thinking and reading." The achievements of these men are too comprehensive to be dealt with in this brief compass, and too familiar indeed to require more than mention; but it is worth while to remember at least that Thomas Linacre, one of the great classical scholars and leaders of the English Renaissance, was the physician of Henry VIII; that Lodge, the Elizabethan novelist and poet, spent the latter part of his life in the practice of medicine; that Locke, the author of the "Essay concerning the Human Understanding," was a physician and practised privately; that some of the ablest and most eloquent prose in the language has been left to us by the physician, Sir Thomas Browne; that Garth and Aken-side and Arbuthnot wrote notably in their day; that one of the best novels, two of the best comedies, and some of the best poetry in the eighteenth century, were written by the physician, Oliver Goldsmith; that one of the most prolific and vigorous novelists of the eighteenth century, Tobias Smollett, practised medicine; that one of the most beautiful and enduring of all short stories, "Rab and His Friends," was written by a physician, Dr. John Brown; that poets as diverse as Crabbe and Keats emerged from the study of medicine into the worship of the Muse; that a physician—and one of the leaders of his profession—Dr. Oliver Wendell Holmes, has endeared himself wherever the English language is spoken, by the grace and sympathetic humour of his poetry and essays; that one of the most successful novelists of our own day is the noted physician, Dr. S. Weir Mitchell; and that no man who writes to-day has a more practised pen and a purer style than the master-physician, Sir William Osler.

Of all these men, who have contributed with varying degrees of distinction to English literature, it is curious to observe that Dr. Holmes alone has, so to speak, superimposed his vocation upon his avocation, and keeps us constantly reminded that it is a medical man who holds the pen. Browne loved to drift into an *O Altitudo*, where the materialities of medicine would have been out of place; Goldsmith never seemed to care enough about his profession to make literary capital of it; but Holmes fashioned his medical knowledge into prose fiction, into essays, into poetry—and fashioned it

so deftly that his works constitute the immortal meeting-ground of medicine and English literature. "The universe swam in an ocean of similitudes and analogies" for Dr. Holmes; and if it was the pathologist who wrote "Elsie Venner," it was the biologist who coined the immortal similitude of the "Chambered Nautilus." What, moreover, could surpass the delightful effrontery of that passage in the "Autocrat," where the doctor discovers that the young lady is in love because her breathing becomes *thoracic*, or that other where the aspirations and passions of his youth become confused in mellow reminiscence with his first dabbings in chemistry—"orange-coloured fumes of nitrous acid and visions as bright and transient; reddening litmus-paper and blushing cheeks;—*cheu!*

'Soles occidere et redire possunt'!

but there is no reagent that will redden the faded roses of eighteen hundred and——"

There was a moment in the closing years of Dr. Holmes's life when he was compelled to balance these two things, his medical achievements and his literary creation, over against each other. It was Dr. Osler who forced the issue by writing a letter to Dr. Holmes, asking which he valued more, "the 'Essay on Puerperal Fever,' which had probably saved many more lives than any individual gynæcologist, or the 'Chambered Nautilus' which had given pleasure to so many thousands."

"I think I will not answer the question you put me," wrote Dr. Holmes in reply. "I had a savage pleasure, I confess, in handling those two professors. . . . But in writing the poem, I was filled with a better feeling—the highest state of mental exaltation and the most crystalline clairvoyance, as it seemed to me, that had ever been granted to me. . . . There is more selfish pleasure to be had out of the poem—perhaps a nobler satisfaction from the life-saving labour."

So spoke the innate modesty which always went hand in hand with the good doctor's frank liking for the things that were his. Explicitly the question remained unanswered, but who shall say that the soul of the doctor did not answer it as we should have done, or that the scales fluctuated long when medicine and literature were thus weighed in the balance?

Case Reports

RADIUM AND AGE

IN the August number of the JOURNAL, Dr. G. Sterling Ryerson gives an interesting resumé of his experiences with radium, in which he makes the following statement: "My experience is that very old persons do not do well with radium. I shall hereafter shun patients of *eighty* years and upwards."

I have had nearly three years' experience in the use of radium, and, curiously enough, my most convincing case as regards the important therapeutic value of the new physical agent, has been in an old lady well above eighty. The following is a brief history of the case:

The patient, an old lady eighty-six years of age, had a large fungating growth arising from the upper and left side of the nose near the inner canthus, completely covering the whole of the eye and extending well down the middle of the cheek. The growth implicated the nasal side of both eyelids. The mass bled very easily, the patient occasionally suffering from sharp attacks of hæmorrhage. The growth had its origin in a small pigmented mole which was irritated. In spite of various forms of treatment, such as cauterization and the use of arsenic paste, it grew steadily worse, until, after eight years, it had obtained its present dimensions. During the last few months it had made very rapid progress.

The growth clinically was what one would classify as a chronic epithelioma without glandular involvement. On account of the patient's refusal, a microscopic examination could not be made.

The case was treated with three radium apparatuses, two containing 80 mg. and 20 mg., respectively, of radium bromide of 500,000 activity, the third 100 mg. of 50,000 activity.

Under the influence of the radium radiations, the growth gradually disappeared, until, six months later, there was nothing left of the original disease save a slight nodular thickening surrounded by some pigmented scar tissue near the inner canthus of the eye. The manner in which the growth vanished reminded me very much of the action of potassium iodide on a gumma.

It is now eighteen months since the last application of radium was made, and there has been no recurrence. I may add that the old lady seemed fully ten years younger than she really was.

Vancouver.

FERNAND L. DE VERTEUIL.

SEROUS MENINGITIS, CHOKED DISC AND MULTIPLE
POLYNEURITIS OF CRANIAL NERVES IN A CASE
OF A YOUNG ALCOHOLIC SMOKER

THE following case report is of interest, not only to the laryngologist but also to the ophthalmologist and the neurologist. This is owing to the fact that the patient under observation suffered from blindness, deafness, total paralysis of the palate, and laryngeal hemiplegia as a result of intoxication from alcohol and tobacco. There developed, likewise, serous meningitis and choked disc. We have tried to find in medical literature a similar case, but in vain. We think that this intoxication with its symptom complex is, if not unique, at least extremely rare.

Case report. O. L., aged twenty-three years, was brought to us at the Hôtel-Dieu, Montreal, on April 22nd, 1909. He informed us that after having imbibed a large quantity of alcohol and having smoked a great deal, he became suddenly blind, that his hearing became impaired, and that, on eating, food regurgitated by the nostrils. His family history showed that his father enjoys excellent health, and his mother died of pulmonary tuberculosis. Apparently there is no nervous diathesis.

Apart from ordinary childhood diseases our patient never suffered from any malady other than those produced by alcohol and tobacco. From the age of nineteen he smoked and drank immoderately. From twenty to twenty-three he grew worse, drinking sometimes thirty glasses of gin and inhaling seventy-five cigarettes a day. During these three years, he was subject to epileptiform attacks, which came on sometimes twice in twenty-four hours. After these attacks the patient would take a few weeks' rest and then recommence his alcohol and tobacco excesses with renewed vigour.

A year ago, at about the same date, he had a slight touch of toxic amblyopia, which gradually disappeared. His constitution is very robust, and his digestion excellent; and it was owing to this that he resisted so long.

Towards the end of March, 1909, after ten days' excesses in tobacco and alcohol, our patient began to complain of headaches. These increased steadily. He noticed in the first week of April that his sight was not as good as before. After three days, during

which he drank and smoked enormously, he found, on the morning of April 19th, that he was stone blind.

During these periods the patient drank only gin, never methylated spirits. The cigarettes were of the Sweet Caporal brand, which were smoked and inhaled.

On April 20th he could see nothing; on the twenty-first he began to see a little. There was vomiting. No constipation, chills, delirium, or convulsions.

Although there was no buzzing of the ears, his hearing was less clear than before. On the twenty-second, when we saw the patient for the first time, he found on trying to eat that the food regurgitated through the nostrils.

On examining the eyes we found that the pupils were dilated, but reacted slightly to light. The ophthalmoscope showed slight double optic neuritis with distended blood vessels. Otherwise, the fundus was normal. At a distance of one metre the patient could count fingers with either eye. The muscles of the eye worked well. No nystagmus. The sensitiveness of the conjunctiva and cornea was normal. Anterior rhinoscopy showed on the left side a deviation of the septum, and on the right hypertrophic rhinitis. No anosmia was present.

On examination of the pharynx we found paralysis of the palate, which had dropped symmetrically. The voice was nasal. Sensibility was not impaired. Considering the ætiology of the affection, electrical examination to complete the diagnosis was considered unnecessary. Posterior rhinoscopy showed hypertrophy of the posterior ends of the turbinates. The tongue, as regards motility, sensibility, and taste, was normal.

On examining the larynx we found paralysis of the right posterior crico-arytenoid muscle. The corresponding vocal cord was fixed in a median position. This explains the fact that the voice was not changed. The right arytenoid was slightly tilted forwards. The sensitiveness of the larynx to a probe remained normal. There was no pertussis-like cough, no tachycardia. No change in the motility of the sterno-mastoid or trapezius. The outer ear and tympanum were normal on each side. Although deaf, the patient heard no buzzing noise. At a distance of two metres only, he could hear a watch which should have been heard at six metres. Tests made with whispering voice corresponded in results with the tests made by the watch. The Weber test was normal, and the Rinne test positive. Gelle's test also was positive, and Schwabach's test showed shortening. Barany's hot water test showed that there was no lesion of the labyrinth.

On examining the face we could detect no trouble, either motor or sensory. The temperature was 37.7° centigrade, the pulse 65.

Apart from headache, the patient complained of stiffness of the back of the neck. Kernig's sign was positive. All the other organs and reflexes were normal. No paralysis or symptoms of hysteria, and no signs of tuberculosis or lues. The urine was normal on analysis.

As choked disc was observed, a lumbar puncture was indicated. This was performed at once, and about 20 c.c. of spinal fluid, which was under light pressure, was withdrawn. Examination of this fluid showed a fairly large number of lymphocytes and polynuclears with a predominance of the latter.

The symptoms, taken collectively, allowed us to make a diagnosis of serous meningitis and multiple neuritis of the cranial nerves brought on by alcohol and tobacco poisoning. My *confrere*, Dr. Dubé, followed the case with us, and we found it of great interest.

In order to allow the patient to eliminate these toxins as quickly as possible, we prescribed milk diet, a cup of hot water early each morning, injections of sulphate of strychnia—ten drops of a one per cent. solution per day, and the application of ice to the head.

The effect of the lumbar puncture was to improve his eyesight the following day, but as the headache did not appear to subside quickly enough, another lumbar puncture was performed. The intradural pressure was marked, though not so great as on the first puncture, and examination of the liquid showed it to be the same as before.

May 1st. Since yesterday the headache has disappeared, likewise the vomiting, which was never a marked feature. Temperature, 37.3° . It has not been higher than 38° since the beginning of the illness. Bowels move regularly. The stiffness of the neck has disappeared and Kernig's sign is no longer positive. Vision without correcting glasses has increased to $\frac{1}{4}$, and the disc has improved in appearance. There is no central scotoma and colours are distinguished normally. The hearing, however, remains the same. There is no improvement in the hemiplegia of the larynx, or in the paralysis of the soft palate, and feeding is difficult.

May 8th. The papillary oedema and the circulation of the fundus have improved. Refraction shows:

$$\begin{array}{ll} \text{R.E.} + 0.50 + 0.25 & 105^{\circ} \text{V} = \frac{1}{2}. \\ \text{L.E.} + 0.50 & 120^{\circ} \quad \text{V} = \frac{1}{2}. \end{array}$$

The patient can hear a watch at a distance of three metres.

Slight movement of the palate and right vocal cord. Temperature and pulse normal.

May 15th. The disc is dull and the œdema has disappeared. Vision with glasses is $\frac{3}{4}$. A watch can be heard at a distance of 4.50 metres. The soft palate on both sides is relatively mobile, and the right vocal cord dilates fairly well.

May 25th. The patient is discharged from the hospital perfectly well. His eyes, ears, palate, and larynx are now in a normal state, and these organs have again acquired the maximum of their physiological functions.

The report which we have summarized merits, we feel, a brief consideration. Serous meningitis described for the first time in a thorough manner by Quincke in 1893, has not been accepted by all physicians. It is not our intention to attack or defend the argument for or against this disease. However, the presence of the symptoms we have described, headaches, vomiting, Kernig's sign, stiffness of the muscles of the neck, increased pressure of the intra-dural liquid, and the presence of a fairly large number of lymphocytes and polynuclears in this liquid, makes it difficult, we think, to deny the existence of meningitis in this case. As during this malady there was only very slight rise of temperature, as the symptoms were mild, as no microbes could be found in the intra-dural fluid, and as the patient was quite well of his meningitis after an illness of only eight days, we are forced to classify it as being serous. The nicotine, and especially the alcohol, absorbed in great quantities by a subject already intoxicated by them, not only affected certain cranial nerves, but also caused an increase of the cerebral fluid and the consequent symptoms. Moreover, it would be difficult by any other hypothesis to explain the presence of this meningitis, and the rapidity with which it improved; the disappearance of the polyneuritis after the elimination of the alcohol and nicotine also makes us accept the above explanation as the most probable one.

The eyes are of great interest. If we go back a year, we find, according to the patient's story, that he already suffered from toxic amblyopia, which was not severe, and which cleared up without treatment. When we first examined him, his sight was very bad, as he could count fingers at a distance of only one metre. However, the ophthalmoscope could show no lesion of the fundus, except an inflammation of the disc of medium intensity. As this affection alone has not usually the effect of producing symptoms so alarming from the point of view of the sight, and especially as the patient

was blind during two days' time, we must find a cause other than œdema of the disc to explain this passing blindness and this amblyopia, abnormally great in proportion to the papillary œdema. A very careful examination allows us to affirm that this is not a case of hysteria. As it would be extremely unlikely that an embolism of both central arteries of the retina coexisted, there is no means of explaining this blindness—apart from injury and poisoning by methylated spirits—other than to admit that besides the inflammation of the disc, there was a very acute intoxication of the optic centres. Thus, our patient, after absorbing a great quantity of alcohol and nicotine, during three days, awoke on the fourth day stone blind. During the following two days the elimination began, the nerve centres regained their functions, and the eyesight returned to some extent. In the following days, when all the poisons had left the system and the discs had regained their normal appearance, and when a quantity of cerebral fluid had been withdrawn which, by the increase in pressure, had compressed the optic nerves, the eyes gradually, in five weeks, returned to normal. We may remark that during the whole course of this affection the patient never suffered from central scotoma. He had no difficulty in recognizing colours, which is contrary to what we always find in cases of toxic amblyopia when the optic nerve alone is affected.

As regards the deafness, we believe that there existed a neuritis of the auditory nerves, which was also of alcohol and nicotine origin. The examination of the tympanic membranes was negative, and acoumetric tests made it evident that the middle ear was intact. The patient never experienced buzzing or vertigo, the Eustachian tubes were normal, and Barany's tests proved that the functions of the labyrinths were perfect. As this deafness, characterized only by a sensation of blocked ears, without other auditory symptoms, was met with in a non-hysterical patient who had never suffered from his ears, and whose condition improved gradually with the elimination of the alcohol and nicotine poisons, and concurrently with the disappearance of the other symptoms of polyneuritis, it would be difficult in this case not to accept the hypothesis of toxic neuritis of the auditory nerves. Perhaps the auditory centres were affected, as the deafness came on rapidly at the same time as the blindness.

If we now analyse the mechanism of the total paralysis of the soft palate together with hemiplegia of the larynx, with no other motor troubles, we see that our patient cannot be classed with those presenting the symptoms described by Avellis, Schmidt, Jackson, and Tapia. Granting that the whole of the soft palate and the

right side of the larynx are affected, we find ourselves in the presence of a modified Avellis. The spinal accessory nerve, which innervates these two sets of muscles, was, on the right side, affected through a sufficient portion of its length to produce the symptoms of Avellis. On the left side, the other spinal accessory was affected only in the part situated above the plexiform ganglion, the pharyngeal branch of the palate being alone affected, and the branch going to the larynx remaining untouched by the inflammatory process.

As the right vocal cord was fixed in a median position, and as the left moved normally, the voice never changed.

Casting a quick glance over the most usual causes of paralysis of the cranial nerves, the following are found to be the most frequent: syringomyelia, poliomyelitis, bulbar apoplexy, tabes, tumours of all kinds, trauma, tuberculosis, and syphilis in its different forms. As regards intoxications, medical literature contains few cases, which makes this report of interest from that point of view. As our patient suffered from none of these affections, and as the paralysis came on following great excesses in alcohol and tobacco, concurrently with other phenomena of intoxication of the same nature, we conclude that we were in the presence of a toxic peripheral neuritis of the right spinal accessory, together with the ascending branches of the palate of the left spinal accessory. The rapidity with which these symptoms cleared up is another strong argument in favour of this opinion. Considering the general condition of the patient it is astonishing that more cranial nerves were not affected.

A careful and minute examination of the sensibility to touch and heat showed no signs of trouble, but of course it is well-known that sensory fibres are more resistant to inflammation than motor fibres.

To resume, a young man of twenty-three, a great drinker and smoker for the past four years, suffered from occasional epileptiform attacks of toxic origin. Towards the end of the fourth year, following an immoderate abuse of alcohol and tobacco, the patient awoke one morning stone blind and deaf, and showing symptoms of meningitis which dated back about three weeks. Three days later paralysis of the palate and one-half of the larynx came on. Five weeks' treatment succeeded in clearing out these toxins and curing the patient. In conclusion, we wish again to call attention to the strange and complex phenomena met with in this young alcoholic smoker, the serous meningitis, the ocular and auditory lesions, and the modified Avellis symptoms.

Montreal.

J. N. Roy.

Editorial

A FEDERAL DEPARTMENT OF PUBLIC HEALTH

DOMINION registration has at last been accomplished, giving the duly qualified physician the right to practise in any part of the Dominion, without the vexatious necessity of passing a separate examination for each province in which he may desire to exercise his profession. For this boon, as everybody knows, the profession owes a large debt of gratitude particularly to Dr. Roddick, whose untiring efforts, in the face of disappointment and temporary defeat, have been crowned finally with success.

There is always more to be done. And the next reform in the sphere of politics which the profession has a right to expect, will be the establishment of a federal board of health. A resolution urging this reform was passed unanimously at the recent meeting of the Canadian Medical Association at Edmonton; and at the inaugural meeting of the Canadian Public Health Association at Montreal in December last certain recommendations were made with this in view. Indeed, at this latter meeting the Minister of Agriculture, the Hon. Mr. Burrell, speaking, as he was careful to point out, unofficially, expressed it as his conviction that the time had come when the public health, even if it did not demand a portfolio, should at least have a full-fledged department in the federal government. The Secretary of State also, the Hon. Dr. Roche, has long been an earnest advocate of the proposed reform, so the movement does not lack powerful friends at court.

We would not accuse the Dominion government of having neglected, heretofore, the public health, which, as Disraeli once remarked, should be the first consideration of a

statesman, but it is justly maintained that there is wide scope in this matter for the enlargement and correlation of its activities, which are at present scattered amongst various departments. In the year 1910 the government expended for the public health service the sum of \$377,485, divided amongst various departments, as follows: the Department of Agriculture, \$146,781; Indian Affairs, \$125,121; Interior, \$66,969; and Inland Revenue, \$38,613. The Department of Agriculture controls the quarantine service, with the Director-General of Public Health at its head, and also Health of Animals and Live Stock Branches; that of the Interior has to do with immigration; while the Inland Revenue Department maintains the government laboratories. Undoubtedly, the inclusion in a single department of these separate subdivisions would make for economy and increased efficiency. During the last session a committee of Parliament, of which Dr. Chabot, M.P., was chairman, sent to the Premier a memorandum pointing out "the grave danger to which the people of Canada are exposed by reason of the incompleteness of suitable laws relating to the public health, and of the indifferent enforcement of such laws as are now in operation," and bringing to his attention "the urgent need of the establishment of a separate department of public health."

Canada lags lamentably behind other progressive countries in the matter of meat inspection. It is true that no meat can now be exported, or transported from one province to another, without the guarantee of the government stamp, but in many parts of the country the consumer has no assurance that the meat he buys is free from taint. There is immediate need of an efficient, uniform system of inspection for the entire country. Again, there is a class of scientific preparations, namely, the viruses, anti-toxines, bacterial vaccines, etc., for which an ever-widening use is found in the detection, prevention, and cure of diseases in man and animals. It is very important that these should conform to definite standards; but at present the government exercises no

supervision or control over their manufacture or sale, except in the case of the few now prepared at the biological laboratory of the Department of Agriculture.

Assuredly a Dominion Board of Health would find much useful work to do. Amongst the matters suggested by Dr. Chabot's committee as coming within its scope are the following: a thorough comparative study of the various provincial health acts, with a view to codification and uniformity, the quarantine laws relating to infectious diseases, particularly, to be made uniform throughout Canada; regulations regarding disinfection of railway cars and public conveyances; more efficient laws as to the purity of food, the prosecution of offenders in cases of adulteration, and the standardizing throughout the country of the quality of milk sold to the public, and also the conditions of its production. In the matter of tuberculosis they recommend Dominion registration of all cases, supervision of all sanatoria, and the establishment of one or two model sanatoria for each million of population. It should organize national laboratories of human and animal pathology, and afford opportunities for scientific research. It would have medical control of all Indians on reservations; and, in addition to the present quarantine regulations, the inspection of immigrants at the port of emigration is recommended, as well as the dissemination in foreign lands of a knowledge of the medical immigration laws. Finally, the matter of the pollution of lakes and streams should be under its control.

With all this in view, we confidently hope that the establishment of a Federal Department of Public Health cannot be long delayed.

THE ANNUAL MEETINGS OF PROVINCIAL MEDICAL ASSOCIATIONS

WE have recently received a letter from Dr. Arthur Wilson, secretary of the Saskatchewan Medical Association, which suggests a few remarks upon the work of the provincial

associations in general. The Saskatchewan Association held its annual meeting during the first week in September, and to judge from Dr. Wilson's letter it was most successful. Although it was held within three weeks of the annual meeting of the Canadian Medical Association at Edmonton, the attendance was creditably large. We are informed that seventy-five men registered, and that the quality of the papers read at the meeting was excellent. The Saskatchewan Association is endeavouring to publish all the papers read in one volume, together with copies of the resolutions passed during the meeting.

We feel that the success of the Canadian Medical Association depends, in a large measure, upon the success of the meetings of the respective provincial associations. And in this sense we venture to record certain suggestions of Dr. Wilson's tending to the improvement of the provincial meetings. He points out first of all that more money is needed. In Saskatchewan the members pay a fee of \$2.00 to the provincial association. This was found insufficient, and he suggests that the Council of the College of Physicians and Surgeons of the province should make a definite grant to the provincial association sufficient to cover the expenses of publication. Dr. Wilson suggests further that the provincial associations should be active in organizing provincial leagues of health to fight tuberculosis and the venereal diseases. We might add that each provincial association should endeavour to form county and town medical societies, which should have a close connexion with the provincial association. This last was very emphatically brought forward by Dr. Mackid in his presidential address to the Canadian Medical Association at Edmonton, and we feel that work of this character should be the first care of the provincial associations. The work of organizing the profession throughout Canada has recently taken on definite shape, and it is clear that one of the chief functions of the Canadian Medical Association and of its organ, the JOURNAL of the Association, should be along these

lines. We congratulate the Saskatchewan Medical Association upon its success at its recent meeting.

PUBLIC HEALTH IN ONTARIO

FOR a number of years the public health of Ontario has been in the care of an inspector and a sanitary inspector, while the provincial board of health consisted of seven members, of whom the secretary was the executive officer. Obviously, under such an arrangement, it has been impossible adequately to do the work included under such a far-reaching term as the "public health of Ontario." In Canada, questions relating to public health have long called in vain; now, at last, they are to receive their answer and the near future will bring many changes. To Ontario goes the honour of being the first in the field. Seven district officers of health have been appointed, and these men will give up all their energies and time to the sanitary work of their districts. The example set by Ontario has been closely followed by Quebec, but the officers for Quebec have not yet been appointed.

The measures embodied in the recent Public Health Act, which was passed by the Ontario government last session, came into force on August 8th last. The local organization of Ontario will remain much the same, but the number of members of the board will be reduced and the medical officer of health will be the executive officer. To prevent unnecessary changes and to increase the efficiency of the medical officer of health, the Act states that this officer shall not be dismissed save with the approval of the provincial board. The Act further provides for an annual conference of the medical officers of health, the first of which was held last month.

Two of the most important features of public health are the water supply and the disposal of sewage. Excellent laboratory facilities are provided at Toronto and at Queen's

University, Kingston; and these are to be supplemented by laboratories in connexion with the Hygienic Institute at London. During the past two years in the Toronto laboratories alone, one hundred and fifty cases of rabies have been treated, and, as the treatment was given at a minimum cost, not less than fifteen thousand dollars were saved to the people of the province. As the lakes and streams of Canada are the chief sources of water supply, it is imperative that measures should be taken without further delay to prevent the pollution of these waters. This question is dealt with at considerable length in the new Act. The care of ice supplies and the inspection of meat are other vital questions which receive attention under the new arrangements.

No great change has been made in the quarantine regulations; but, in future, all cases of measles are to be placarded, and the period of isolation in scarlet fever is to be extended from five to six weeks. Compulsory vaccination is to be enforced in any municipality in which small-pox is present. The health inspectors are authorized to board all trains, boats, etc., coming from infected areas, and passengers who are unable to prove that they have been duly vaccinated are to be vaccinated at once or sent back to the point of embarkation. All cases of communicable disease are to be reported by the householder or by the physician in charge of the case within twelve hours of diagnosis. The term ["communicable disease" is clearly defined in the following words: "Communicable disease shall mean and include any contagious or infectious disease, and shall include small-pox, diphtheria, scarlet-fever, measles, German measles, glanders, cholera, erysipelas, tuberculosis, mumps, anthrax, bubonic plague, rabies, poliomyelitis, and cerebro-spinal meningitis." In the case of tuberculosis, weekly reports are to be submitted to the provincial health board. Maps are to be kept by all municipalities and the location of all cases of tuberculosis within their borders is to be marked on them. If considered necessary by the provincial board of health, or by the local officer

of health, a patient may be removed to a hospital or sanitarium and required to remain there until it is considered advisable for him to return home. In the case of indigents, the expense shall be borne by the municipality; and should the patient have no place of abode, the municipality to which the medical officer belongs who sends him to the institution shall be responsible. In unorganized districts of the province, the provincial board will undertake this duty and the expenses will be paid from a fund to be voted for this purpose by the legislature. Patients suffering from tuberculosis shall notify the local authorities of any change of residence, and, if they remove to another locality, the medical officer of health shall be informed immediately. Printed instructions as to treatment will be forwarded to each patient by the provincial board of health as soon as the case has been reported. Provision has also been made for the disposal of the bodies of persons dying from contagious diseases. Any person who contravenes the provisions mentioned above incurs a penalty of from twenty-five to one hundred dollars.

To Nova Scotia belongs the credit of having been the first province in Canada to establish a sanitarium for the treatment of tuberculosis. Already much has been accomplished in the prevention and treatment of this disease; yet much remains to be done. The field is large and the disease creeps on relentlessly. The individual may do much to evade the dreaded foe, but he must first of all be instructed as to what he should do. At a recent meeting of the Nova Scotia Medical Association, a committee was appointed, consisting of Dr. J. B. Black, Dr. G. H. DeWitt, and Dr. Ross Faulkner. The members of this committee suggested to the government that a physician should be appointed whose duty it should be to examine all suspected cases of tuberculosis throughout the province; and that, to supplement the work of this physician, nurses should be appointed in each municipality,

who would instruct those suffering from the disease in its incipient stage as to the most effective means of arresting the progress of the disease and preventing its spread amongst those with whom they come in contact. Thus, many patients will be given an opportunity of recovery who, otherwise, would not receive proper treatment until they were unable to fulfil their daily duties, and perhaps until the disease was so far advanced that little hope of recovery could be entertained. This suggestion is likely to bear fruit in the near future and there is little doubt that a physician who is an expert in the diagnosis and treatment of tuberculosis will soon be appointed and will be assisted by qualified nurses in the various municipalities.

At the March meeting of the Owen Sound Board of Health, Dr. H. G. Murray offered to inspect gratuitously for one year the children attending the public schools in that city. The offer was accepted by the board, and Dr. Murray begins his work of inspection this session. The need for the medical inspection of children is becoming more widely recognized, and a system of inspection is already in vogue in most of the large cities of the Dominion. Not only do the physical defects of the children demand this inspection, but the mental state of the child, also, frequently requires consideration. Children mentally deficient should be placed in a separate class, where they can be more carefully studied by the teacher, and where every assistance may be given them to overcome their deficiencies. The plan outlined by Dr. Murray is somewhat as follows: the teacher will report to the medical inspector any physical defects that may have been observed among the children under his supervision, and these children will be examined by Dr. Murray on his next visit to the school; each school will be visited once a week. Any child who is in need of treatment will receive a printed note addressed to the parent, explaining the nature of the defect and asking that the child be taken to the family physician for examination and treatment.

WE have received enquiries as to the working of the recent Canada Medical Act. The Act provides for the formation of a Dominion Medical Council which will work out the details of its administration. Dr. Roddick informs us that the Hon. Dr. Roche, Secretary of State, who has the matter in hand, hopes to have everything in readiness to convene the Council towards the middle or end of October. Until then, no reliable information can be given regarding the scheme of Dominion medical registration.

THE following figures, which are taken from the treasurer's report, are of interest as showing the development of the work done at the Vancouver General Hospital during the past nine years. In 1903 there were nineteen hundred and fifty-six hospital days; in 1911 this number had increased to one hundred and five thousand two hundred and thirty-four. Eight hundred and fifty-seven patients were treated in 1903, while in 1911 five thousand three hundred and fifty-one were treated. In 1903 the daily numbers were fifty-two; in 1911 they were two hundred and eighty-eight. In 1903 there were nineteen nurses and nine persons employed, in 1911 there were eight physicians, seventy-two nurses, and seventy-three persons employed. As to the financial equipment of the hospital during the last nine years, the board of directors have received \$326,961 from the proceeds of by-laws, and they have expended \$323,635; in addition, they have expended \$33,991 on the nurses' home, \$26,761 on the infectious hospital, and \$36,023 in furnishing and equipment. They have also expended \$40,102 on capital account, thus making a total of \$460,462 expended, or \$133,501 in excess of the amount received. It is clear that during the nine years' activity of the board, and even with the most rigorous economy, the amounts received have been far from adequate to meet the expenses incurred in the work of the hospital.

Book Reviews

DISEASES OF THE EYE. A MANUAL FOR STUDENTS AND PRACTITIONERS. By J. HERBERT PARSONS, D.S.C., M.B., B.S., F.R.C.S. Second Edition. Toronto: The Macmillan Company of Canada, Limited, 1912.

Of the several excellent text-books on diseases of the eye specially designed for the student and general practitioner, none has appeared during the past few years more worthy of the highest possible commendation than Parsons' recent work. His position, as one of the world's recognized authorities upon the pathology of the eye, has ensured unusual interpretation of the subject-matter, which he treats at once in an intelligent and most interesting manner. He has, however, very wisely avoided sacrificing other features of the work to special pathology, which might possibly be beyond the average reader's appreciation; but after a brief pathological resumé of the subject, he discusses clinical features, therapeutic and operative treatment, throughout, in their natural sequence.

The book is quite up-to-date in the more recent methods of examination and in operative procedures, unusually well printed and admirably well illustrated. Certain drawings of the fundus oculi being especially worthy of notice. The work can most heartily be recommended to any one interested in the subject of ophthalmology.

AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS BY VARIOUS WRITERS. Edited by HERBERT FRENCH, M.A., M.D. (Oxon.), F.R.C.P. (Lond.), assistant physician to Guy's Hospital. With sixteen coloured plates and over two hundred illustrations in the text. Price, \$8.00. Toronto: The Macmillan Company of Canada, Limited, 1912.

This is a remarkable book, by reason of its eight hundred and fifty pages of seven hundred and fifty words each, and its general index of one hundred and sixty pages; but as it covers the entire ground of disease, that is, perhaps, not a cause for wonder. Its contributors are men of the first rank, and the subjects which we have read closely are thoroughly and adequately treated. The

idea of the publication is to allow the main symptom of a disease to be quickly rehearsed; we venture to say that in a case of doubt the reader will have at once brought to his memory all the states of body in which that symptom appears; by a judicious use of the huge index, he is informed of diseases that he may have overlooked or forgotten. The differential diagnosis between these diseases is brought before him concisely.

The diagrams are excellent, the charts good, while the illustrations are all interesting, although not a marked feature of the book. The courage which faced so great a task is admirable, and we heartily commend the book as a very useful addition to every medical library.

INFANT FEEDING. By CLIFFORD G. GRULEE, A.M., M.D., Assistant Professor of Pediatrics at Rush Medical College, Attending Pediatrician to Cook County Hospital. Octavo of 295 pages, illustrated. Philadelphia and London. W. B. Saunders Company, 1912. Cloth \$3.00 net. Sole Canadian Agents, The J. F. Hartz Co., Ltd., Toronto.

THE author states that his object in preparing this book was to present our knowledge of the scientific processes which underlie infant feeding, and the practical application of these principles, in such a way that they can be grasped by the practising physician. He has drawn largely upon the published works of Frankelstein, Czerny and Keller, Meyer and Freund; thus, the subject is presented from the German point of view entirely.

The fundamental principles of infants' nutrition occupies the first portion of the book. The special points in the anatomy and the physiology of the gastro-intestinal tract in the infant are discussed briefly and in a very interesting way. The bacteriology of the intestinal tract of the healthy infant follows, and the interesting point is noticed that the smear of a stool from a breast-fed baby is always Gram-positive, and that of an artificially fed baby Gram-negative, the reason probably being that in mother's milk the fermentative processes predominate and in cow's milk the putrefactive. This portion of the subject concludes with a chapter on the attributes of the normal child. He states that the gain in weight of a child should be six to eight ounces a week, during the first six months, while from the sixth to the twelfth month, the gain should not be more than two to three ounces. He gives it as his experience that the baby who is extremely fat at the end of the first year suffers from attacks of gastro-intestinal disturbance

during the second year, and states that if we are to regard the weight curve of the breast-fed infant as the ideal standard by which to judge the artificially fed, we may be sure we will have but few normal artificially fed infants.

In Part II the author deals with the nourishment of the infant on the breast. Dealing first with the anatomy and physiology of the human breast, he then discusses the technique of nursing and the nutritional disturbances of the breast-fed infant. He strongly advocates a four-hour interval of nursing, or six nursings in the twenty-four hours.

Part III deals with artificial feeding, first discussing the foods used, giving in detail methods of preparation.

The next chapter, dealing with artificial feeding of the normal infant, is the most interesting in the book. The author does not follow the so-called percentage method, urging that it is largely responsible for the wholly fallacious idea that the protein is the source of gastro-intestinal disturbances in infancy, and also that the advocacy of such complicated mathematical formulæ as this method involves, has driven a large majority of physicians to the indiscriminate use of patented infant foods. It is impossible, he thinks, to lay down exact formulæ which will suffice in even a majority of infants.

Simple guiding rules are then given for the artificial feeding of infants with cow's milk and cereals. In the great majority of cases forty-five calories of food should be given to the pound weight in twenty-four hours, and this is the chief guiding rule given. The author believes in simple dilution of whole milk with the addition of carbohydrates, preferably in the form of malt-sugar and various starches. Up to the third month no starches are given.

Then follow chapters upon nutritional disturbances, the author following the well-known classification of Frankelstein in dealing with this portion of the subject.

Part VI, Nutrition in Other Conditions, concludes the book. In this section there are interesting chapters on the premature infant, the spasmophilic diathesis, the nervous infant, infant feeding in eczema, and congenital pyloric stenosis and pylorospasm. A comprehensive index is included.

The work is full of interest, the subject is clearly and simply presented, and while scientific in tone, the book will be found very useful by the practical physician.

The large print, and white unglazed paper and freedom from useless illustrations, show that the publishers have considered the reader's comfort.

Books Received

The following books have been received, and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

COLLECTED PAPERS BY THE STAFF OF ST. MARY'S HOSPITAL (MAYO CLINIC), 1911. Octavo of 603 pages, illustrated. Price, \$5.50 net. Philadelphia and London: W. B. Saunders Company, 1912. Canadian Agents, The J. F. Hartz Company, Ltd., Toronto.

THE LOCAL INCIDENCE OF CANCER. By CHARLES E. GREEN, F.R.S.E. Edinburgh and London: William Green & Sons, 1912. Price, 1s. 0d.

PELLAGRA. HISTORY, DISTRIBUTION, DIAGNOSIS, TREATMENT, ETIOLOGY. By STEWART R. ROBERTS, S.M., M.D. With eighty-nine special engravings and coloured frontispiece. Price, \$2.50. St. Louis: C. V. Mosby Company, 1912.

THE TREATMENT OF INFANTILE PARALYSIS. By OSKAR VULPIUS, M.D. Translated by ALAN H. TODD, M.B., B.S., B.Sc. (Lond.); with introduction by J. JACKSON CLARKE, M.B. (Lond.), F.R.C.S. Illustrated with two hundred and forty-three figures. Price, 10s. 6d. net. London: Baillière, Tindall and Cox, 1912.

ELEMENTS OF PRACTICAL MEDICINE. By ALFRED H. CARTER, M.D., M.Sc. Tenth edition. Price 9s. net. London: H. K. Lewis, 1912.

THE CLINICAL PATHOLOGY OF SYPHILIS AND ITS VALUE FOR DIAGNOSIS AND CONTROLLING TREATMENT. By HUGH WANSEY BAYLY, M.A., M.R.C.S., L.R.C.P. Price 5s. net; one hundred and ninety-six pages, illustrated by three plates and twenty-two figures. London: Baillière, Tindall and Cox, 1912.

MOUTH HYGIENE AND MOUTH SEPSIS. By JOHN SAYRE MARSHALL, M.D., Sc.D. Philadelphia and London: J. B. Lippincott Company, 1912.

ARTERIOSCLEROSIS. ETIOLOGY, PATHOLOGY, DIAGNOSIS, PROGNOSIS, PROPHYLAXIS AND TREATMENT. With a special chapter on Blood Pressure. By LOUIS M. WARFIELD, A.B., M.D., with an introduction by W. S. THAYER, M.D. Illustrated with twenty-eight engravings. Second, revised edition. Price, \$2.50. St. Louis: C. V. Mosby Company, 1912.

THE SURGICAL CLINICS OF JOHN B. MURPHY, M.D., at the Mercy Hospital, CHICAGO. Vol. I, No. 2 and No. 4. Price: \$8.00 a year; published bi-monthly. Philadelphia and London: W. B. Saunders Company, 1912.

HISTORY OF THE MEDICAL TEACHING IN TRINITY COLLEGE, DUBLIN, AND OF THE SCHOOL OF PHYSIC IN IRELAND. By T. PERCY C. KIRKPATRICK, M.D., M.R.I.A. Dublin: Hanna and Neale, 1912.

A TEXT-BOOK OF PATHOLOGY FOR STUDENTS OF MEDICINE. By J. GEORGE ADAMI, M.A., M.D., F.R.S., and JOHN McCRAE, M.D., M.R.C.P. (Lond.). Illustrated with three hundred and four engravings and eleven coloured plates. Philadelphia and New York: Lea and Febiger, 1912.

THE PITUITARY BODY AND ITS DISORDERS. CLINICAL STATES PRODUCED BY DISORDERS OF THE HYPOPHYSIS CEREBRI. By HARVEY CUSHING, M.D. An amplification of the Harvey lecture for December, 1910; three hundred and nineteen illustrations. Philadelphia and London: J. B. Lippincott Company, 1912.

PHARMACOLOGY AND THERAPEUTICS FOR STUDENTS AND PRACTITIONERS OF MEDICINE. By HORATIO C. WOOD, JR., M.D. Philadelphia and London: J. B. Lippincott Company, 1912.

INTERNATIONAL CLINICS. Vol. II, twenty-second series. Edited by HENRY W. CATTELL, A.M., M.D. Philadelphia and London: J. B. Lippincott Company, 1912.

Men and Books

BY SIR WILLIAM OSLER

XIV. KELLY'S AMERICAN MEDICAL BIOGRAPHY. What more delightful in literature than biography? And yet, how uncertain and treacherous is the account which any man can give of another's life! And who is to be trusted to give a correct account of his own? Montaigne is the only great autobiographer; the only man whose spirit and pen make us feel that we know as much of him as any one of us could tell of himself; the only man we believe when he says, "I have either told all, or designed to tell all. . . . I leave nothing to be desired or guessed at concerning me." However imperfectly told, the story of any life has an interest which appeals to us in direct proportion as we feel that brotherly sympathy with human effort, careless of the result, whether success or failure.

When my colleague, Howard Kelly, spoke of a scheme for a great work on American medical biography, I envied his extraordinary capacity for initiative and for work. Few men of his generation have known the profession of his own country so well, and with his gift for organization, and for getting good work out of others, I felt sure the plan would be successful. I remember that I urged him to take as a model the "Dictionary of National Biography," and to choose subjects of the first rank only, and to have their lives written by various authors. The result is two big volumes in which American and Canadian medical biography is brought up-to-date. The work is well done and will be of permanent value for reference. But much more than this—it is of immense importance to have a sympathetic record of the men who have borne the burden and the heat in making the profession of the New World what it is to-day. There are lives we could have spared, of men who had attained great local prominence, but who contributed little to the common stock; but, in apologizing, Dr. Kelly remarks that some of these have influenced their fellows by a strong personality. The best men are here, and with a few exceptions, the story of their lives is accurately told. With the Index Catalogue of the Surgeon General's Library so accessible, the bibliographies could in many cases have been omitted. It is nice

to have biographies of the men who laid so well the foundation stones of Canadian medicine—Holmes, Widmer, Campbell, Howard, Almon, Rolph, and others.

The volumes are full of surprises. Conrad Gesner is one of my heroes—physician, naturalist, lexicographer—one of the most fascinating figures in the profession of the sixteenth century, and it is intensely interesting to find that Dr. Abraham Gesner, a pioneer geologist of Nova Scotia and the discoverer of kerosene, was one of his descendants.

Very often I have come across the name of Mettauer, a most voluminous contributor to the older American periodicals. The story of his career is very extraordinary, as he appears to have been an ante-bellum predecessor of the Mayo brothers, having a surgical clinic of remarkable extent for those days, and for a country district in Virginia.

There are excellent sketches of the physician-naturalists and botanists, a group so dear to Dr. Kelly's heart, and the biographies of Agassiz, Asa Gray, and Morton, were of special interest to me.

There are a good many grievous omissions—the Jacksons, James, James jr., and J. B. S.; Henry I. Bowditch, and Henry J. Biglow, Boston men of the very first rank; Dickson, of Charlestown, S.C., one of the strongest writers of the profession; LaRoche, William Pepper, senior, John Forsyth Meigs, the Rogers brothers of Philadelphia, and David Ramsay, the historian of the Revolution and of Washington—these should come in a second edition.

THE necessity for a sanitarium for the isolation and treatment of cases of tuberculosis has been felt for some years past by many residents of Berlin, Ontario. As a result of continued agitation, a by-law has been submitted at last, which, if carried, will provide fifteen thousand dollars towards the establishment of the much needed institution. A Tuberculosis Sanitarium Trust was formed recently, and to this trust will be given the management of the suggested sanitarium and the supervision of the building arrangements. The trust will be aided very materially in its work by the Ontario government, which will contribute one dollar for every five dollars spent by the trust, and, in addition, three dollars a week towards the cost of maintenance of patients paying less than five dollars a week.

Res Judicata

ON THE BALANCE OF THE BASES, SODIUM, POTASSIUM AND CALCIUM IN THE BODY. A REVIEW OF SOME RECENT PAPERS

SEVERAL years ago, 1896, Sir Almroth Wright called attention to the apparent effect of the administration of calcium salts in controlling the rashes subsequent to inoculation with typhoid vaccine, diphtheria antitoxin, etc., and, later, to their action in controlling exudative inflammation. He ascribed these results entirely to an increase in the coagulability of the blood brought about by the calcium. Subsequent work could by no means justify this hypothesis, and, partly in consequence of this defect, the treatment has never gained an assured place in therapeutics.

The work of Hans H. Meyer's pupils in Vienna, however, has given the matter a new and valuable trend. During the progress of a study of oxalate and iodide poisoning, certain results were noted that suggested the following experiments, carried out by two of his pupils, Chiari and Januschke.¹ If dogs are poisoned with large doses of iodides, very marked pleural effusions are caused, but if the poisoned animal be given repeated subsequent injections of calcium chloride, no pleural effusion occurs, though the animal shows the other characteristic signs of iodide poisoning. In the same way, dogs poisoned with thiosinamin can be protected from pleural effusions by injections of calcium salts. So, too, guinea-pigs poisoned with diphtheria toxin fail to show the characteristic pleural effusions if calcium salts be administered. Even more striking are the experiments upon the influence of calcium on the control of exudative inflammations of the mucous membranes. These experiments can be carried out under anaesthesia. If either oil of mustard or abrin be placed in the conjunctival sacs of rabbits, very marked oedematous inflammations occur, but if the animals are previously injected with calcium salts any inflammation which takes place is quite dry. The following experiment shows that Wright's explanation is not adequate. If hirudin, the active principle from leech heads, be injected in sufficient quantity into any animal, coagulation of the blood is prevented, even if the blood

be shed. If, now, an injection of this extract be first given, an exudative inflammation can be set up, as is normally the case, and can be checked in characteristic fashion by calcium even though the latter has produced no effect on the coagulability of the blood. Evidently the explanation of this phenomenon must be sought for elsewhere.

The work of numerous observers during the past few years has shown that the salts of calcium and of magnesium have marked effects in producing precipitation of proteins and other colloidal cell constituents. Miculicich showed that calcium salts delayed the laking of red-blood cells by such bodies as urethane, and Henderson called attention to observations by Fuhner which showed in part what the steps in such a reaction might be. If frogs' muscles be placed in very weak solutions of guanidin, they show in a few minutes very characteristic twitchings; these may be brought to rest or prevented from appearing if a certain proportion of calcium is present in the mixture. Now if muscles which have been in a calcium-guanidin solution and have shown no twitchings are removed and placed in a saline free from guanidin and calcium, the twitchings at once appear. Evidently, in this case, the guanidin has gained entrance but has been unable, in the presence of the calcium, to carry out its typical effect. Jacques Loeb has also shown that the rhythmic twitchings brought on by the immersion of muscles in solutions of sodium and potassium salts can be prevented or dissipated by the addition of calcium.

It remained for Herbst⁸ to show that the cement substance between many body cells widens and becomes looser when deprived of calcium, and becomes more compact and firmer by an addition of the same. It seems that the correct explanation of the absence of effusion in the cases mentioned above is to be found in some such action on the capillary wall, thus preventing the exit of plasma into the tissue spaces.

Meyer then remembered a remark made by Cushny, to the effect that the usual saline purgatives were in all cases precipitants of calcium. This led Chiari² to study the calcium content of the intestinal wall and of its secretion during the action of various purgatives. Under anæsthesia he ligated a loop of intestine and inserted into its lumen a solution of one of the purgative salts, sodium sulphate for example. He then replaced the loop in the abdomen and waited an hour; at the end of this time he found the content of the loop increased somewhat and that the fluid contents contained a very considerable amount of calcium. The wall of the

loop was also richer in calcium than that of other parts. He assumed that the action of the purgative had led to the precipitation of the calcium within the wall, thus rendering it physiologically inert; some of the inert calcium had been excreted, but much more had lain in the wall and been added to by additional calcium taken up by the blood to replace that thrown out of physiological use. When similar experiments were made with mannite, a sugar, no such changes in calcium were detected. Calomel is a purgative. Mercury poisoning leads to osteoporosis and to calcium deposits in the kidney. Chiari then studied its action in a similar fashion. He found that the contents of the loop were indeed rich in calcium, but that the intestinal wall throughout, including the loop, was poor in calcium. In all probability the mercury absorbed had led to a diffuse action throughout the intestine. It may be recalled in this connexion that the action of mercury as a diuretic agent is due to its causing a hydræmia secondary to a marked increase in peristalsis in the small intestine, together with a decrease in absorption and an increase in secretion, thus leading to a large amount of water passing rapidly into the large intestine and a rapid absorption from there (Fleckseder⁷). According to Chiari, the marked peristalsis following the exhibition of pilocarpin or physostigmin is also accompanied by a decrease in the calcium content of the intestinal wall. The experiment of Mathews and Brown, showing that the peristaltic action of physostigmin may be counteracted by calcium, is well known. It may also be recalled that in cases of intestinal catarrh there is a marked increase in the intestinal excretion of calcium (Fr. Müller, Solomon and Wallace). These experiments must not be considered as furnishing the whole explanation of the action of purgatives, but the variations in calcium content are, no doubt, either necessary accompaniments or form one of the important factors. In the case of saline purges it is clear,—from the fact that such substances as mannite, which have no effect upon the calcium content of the wall, yet exert a laxative action when they are placed in the intestine and become dissolved in a mass of water,—that the mass of water alone distending the wall would set up the increased peristalsis mechanically.

The influence that such alkaloids as physostigmin seemed to exert upon the calcium content of organs naturally gave rise to the question as to whether the calcium content had any effect on the action of stimulation of nerves. Chiari and Fröhlich³⁻⁴ were soon able to show that animals poisoned with oxalate, which withdraws calcium from the body, showed an increase in irritability to such

chemical stimuli as adrenalin, pilocarpin, and atropin, in so far as certain nerve-endings were concerned. Less adrenalin was needed in cats thus poisoned than in normal cats to bring about a rise in blood-pressure. In some cases, injections of calcium chloride were able to restore the endings so rapidly that its effect could be detected within a few minutes. This was by no means always the case.

At this point a Viennese dermatologist, Luithlen,⁵ became interested in the problem and came to the laboratory to carry on some experiments. He very quickly found that while in normal dogs a moist eczema could not be produced experimentally, this was readily achieved in dogs previously poisoned with oxalate. He also found that animals to whom considerable doses of hydrochloric acid had been given manifested the same increase in skin irritability, but that this could not be relieved by injections of calcium, so that decrease in calcium content did not seem to furnish the sole explanation of the increase in irritability. Other observers had previously shown that any acidosis, such as that produced by feeding acid or occurring during disease (diabetes), was accompanied by disturbances in the excretion of the bases, sodium, potassium, etc., (Walther, Dunlop, and others).

Luithlen⁶ therefore undertook a more extensive study. By feeding animals (rabbits) on a fixed diet and estimating their total intake and output of sodium, potassium, calcium, and magnesium, he was able to show that the effect of an artificial acidosis produced by feeding hydrochloric acid was a marked loss in all these bases, but especially in sodium and potassium. The body seemed to hold on to the calcium and magnesium more greedily. As a result of the acidosis, there occurred a gradual demineralization of the body.

Luithlen's further experiments showed that when a rabbit was fed on a diet of green food alone, there was an increased retention of calcium, magnesium, and potassium, but a loss of sodium—more was excreted than fed. On the whole, there was, however, an increased retention of base, an increased mineralization of the body. Animals fed on green food alone very soon sicken and die. When fed on oats an equilibrium was quickly reached between the total base fed, no matter how great, and the amount excreted, but the body lost in calcium and potassium and gained in sodium and magnesium. Animals fed for a long time on oats show, however, no signs of ill health, and ere long a complete balance must be struck in the case of the other bases also. Luithlen's observations extend and confirm those of Goiten, Kochmann, Martin, and Petsch, who showed

that when animals were fed on a diet poor in calcium they lost calcium up to a certain point. When a rabbit is fed on green food he receives some four times as much of the above bases as when fed on oats, and some fourteen times as much calcium.

Luithlen was also able to show that in animals suffering from acidosis there was a definite loss of calcium from the skin, and, indeed, as was to be expected, the change in basic content of the skin exactly corresponded with that described above for the general metabolism of the body as a whole. Since the early work of Loeb and Overton, and especially since Ringer's experiments with the perfused heart, physiologists and pharmacologists have realized clearly that, for the maintenance of the best working efficiency of the body, there must be a certain balance between the various salt bases, and that life, indeed, was impossible if this balance were departed from to any marked extent. The extent and intricacy of this law, however, has never previously been put so clearly before us.

It is difficult to make clinical deductions from the work presented above. It seems of vital importance that we should have more detailed information about the effect of diabetic and other acidoses on the basic equilibrium of the human body, and if we may provisionally assume—as from the partial studies now existing it seems we have every right to do—that the course of a diabetic acidosis follows the course of an experimental one produced by the administration of hydrochloric acid, it is obvious that not one base alone—in the form of carbonate or acetate—must be offered to the body to neutralize its acids, but a mixture of all the bases, so that the body may select. In this connexion the occurrence of eczema in a case of diabetes may form a most useful warning of danger. The suggestion is obvious, of course, that in cases of moist eczema and other exudative inflammations, this feature at all events of the disease may be controlled by the administration of calcium directly or by a change to a calcium-rich diet.

References:—

1. CHIARI AND JANUSCHKE, *Arch. f. exp. Path. u. Pharm.*, 65, 1911, p. 121.
2. CHIARI, *ibid.* 63, 1910, p. 434.
3. CHIARI AND FRÖHLICH, *ibid.* 64, 1911, p. 214.
4. CHIARI AND FRÖHLICH, *ibid.* 66, 1911, p. 410.
5. LUTHLEN, *ibid.* 68, 1912, p. 209.
6. LUTHLEN, *Wien. Klin. Woch.*, 25, 1912, No. 18.
7. FLECKSEDER, *Arch. f. exp. Path. u. Pharm.*, 67, 1912, p. 407.
8. HERBST, *Arch. f. Entwicklungsmech.*, 9, p. 429.

Toronto.

V. E. HENDERSON.

Retrospect of Obstetrics

LE LORIER—"PERCHLORIDE OF IRON TEST IN HYPEREMESIS GRAVIDARUM." "L'URODIAGNOSTIQUE ET L'UROPROGNOSTIQUE DES VOMISSEMENTS GRAVES DE LA GROSSESSE PAR LE PERCHLORIDE DE FER." *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris*, April, 1912.

LE LORIER, in March, 1912, in a paper read before the Société de Biologie, states that he, aware of the relationship of acetoneuria and fasting, was led to search for acetone and acetone bodies in the urine of women suffering from pernicious vomiting of pregnancy. Contrary to what he expected, he found that the presence of acetone was inconstant.

In testing these urines by means of a solution of perchloride of iron, he noted that in each case he obtained the port wine colouration, which Gerhardt reports is constant in the urine of diabetics in whom coma is imminent.

Le Lorier found the reaction constant in the urine of four cases of pernicious vomiting of pregnancy, which he had encountered in the course of three years.

He considers that at present there is not sufficient importance attached to the significance of the presence of acetone and acetone bodies in the urine of cases of pernicious vomiting of pregnancy. Fleux and Dantin in reporting a case of pernicious vomiting treated recently by injections of serum, note the presence of an unusually large amount of acetone bodies, and of beta-oxybutyric acid in particular, in the urine examined. This, Le Lorier mentions, supports his findings.

The author considers that the intensity of the colour reaction obtained by the chloride of iron test is proportional to the gravity of intoxication of the patient. Thus he considers the test is certain and easy of application.

With regard to the character of the reaction obtained on the addition of a solution of perchloride of iron to the urine in these cases, he states that it is neither the acetone bodies nor beta-oxybutyric acid which gives rise to the deep port wine colour, but, in all probability, it is due to the presence of acetyl-acetic acid.

Le Lorier has failed to obtain this reaction on testing the urine

of normal cases of pregnancy, or in the urine of cases of pregnancy complicated by pathological conditions other than pernicious vomiting. No reference is made to his having tested the urine of cases of eclampsia.

In one instance he obtained a feeble colouration in a case during labour. In another instance he failed to obtain the colouration in the urine of a patient who had, for three weeks, been on a water diet on account of appendicitis, therefore he concludes that fasting fails to produce it.

Le Lorier concludes that, as the perchloride test shows that acidosis is intense in pernicious vomiting of pregnancy, alkaline solutions should be injected into the veins, and suggests a solution of eight per cent. sodium carbonate for this purpose.

The author considers that in this reaction we have a practical and simple means of ascertaining the gravity of the condition present, and thus a method that may be of assistance in enabling a decision to be reached that the induction of abortion is necessary.

PERNICIOUS VOMITING OF PREGNANCY AND THE SERUM OF WOMEN IN THE EARLY MONTHS OF GESTATION.

FIEUX ET DANTIN—(1)“ Vomissements graves de la grossesse et sérum de femme enceinte des premiers mois.” *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris*. No. 1, January, 1912.

(2) Contribution à l'emploi du sérum de femme enceinte normale des premiers mois dans la thérapeutique des vomissements graves de la grossesse. *Bulletin de la Société d'Obstétrique et de Gynécologie de Paris*. No. 4, April, 1912.

The authors, having been deeply interested in a publication of Mayer and Linser, of Tübingen, relating to the rapid cure of a pregnancy dermatosis following injections of blood serum from a normal case of pregnancy, determined to apply the same treatment in a case of pernicious vomiting of pregnancy.

The case which first was subjected to the treatment was in a desperate condition, but before inducing abortion, which was considered necessary, the patient was given an injection of 12 c.c. of serum obtained from a healthy woman who was eight and a half months pregnant. No improvement was obtained, and accordingly the uterus was emptied and the patient recovered.

Le Lorier, in July, 1911, reported a case of pernicious vomiting treated by injections of blood serum obtained from a pregnant woman in normal condition, who was approaching term, in which rapid and satisfactory results were obtained.

Encouraged by the results obtained by Le Lorier, the authors determined on the next occasion to employ serum from a healthy woman at the second or third month of pregnancy, believing that at this period the humoral reactions should be more intense, and consequently the serum vaccine more active. Accordingly, in this communication they give a detailed report of a case which they submitted to this treatment with excellent results.

The patient was in the fourth month of her third pregnancy, and was suffering from severe vomiting, which had persisted for some weeks in spite of ordinary treatment. Her urine was found to contain urobilin and a large quantity of acetone bodies. After several days of hospital treatment, without much improvement, a large quantity of beta-oxybutyric acid was found in her urine. A hypodermic injection of 10 c.c. of serum, obtained from the blood of a healthy woman a few moments after she had aborted in the third month, was followed by marked, but somewhat temporary, improvement. As the amelioration in the patient's condition was not progressive, a second injection of 12 c.c. of serum from a healthy woman in the third month of her pregnancy was given. This was followed by a very rapid improvement in the patient's condition, the vomiting disappeared, the quantity of urine excreted increased, its character improved, and the recovery was prompt and satisfactory. Following the first injection of serum no other treatment was attempted, and the patient was permitted to partake of whatever food she desired.

In a later communication, as above, the authors report a second case. The patient, aged twenty-four years, was free from any neuropathic history. Her first pregnancy had to be terminated by abortion on account of incoercible vomiting. Her second pregnancy went to term and she was delivered of a healthy child.

Within a month of the onset of her third pregnancy, vomiting began and rapidly increased in severity till all the symptoms of severe toxæmia manifested themselves. An injection of 10 c.c. of normal human serum failed to control the vomiting, but a transitory slowing of the pulse rate, lasting four days, was apparent. Subsequently the pulse rate rose to from 104 to 112 per minute.

An injection of 12 c.c. of serum from a healthy woman in the third month of pregnancy was followed by twenty-four hours of severe bilious vomiting, though the pulse rate slowed down to less than 100 per minute. The next day improvement set in and several days later cure was complete.

Retrospect of Surgery

DIVERTICULA OF THE GASTRO-INTESTINAL TRACT: THEIR SURGICAL IMPORTANCE. BY CHARLES H. MAYO, *Journal of the American Medical Association*, July 27th, 1912, p. 260.

IN this interesting communication the author deals with diverticula, congenital and acquired, met with throughout the gastro-intestinal tract, those of the œsophagus and of the large bowel forming the two most important groups. Of the former, thirteen cases are reported from the clinic at St. Mary's Hospital. Ten of them were operated upon and cured. The diagnosis of œsophageal diverticula has been rendered comparatively easy, both as to location and extent, by radiography following the ingestion of a suspension of bismuth and by the Plummer test. The latter consists in having the patient swallow a few yards of silk twist. When sufficient of this thread has passed through the stomach and into the intestine to stand traction, the outer end, which has been retained, is passed through a perforated œsophageal bulb-pointed probe, which is passed down into the diverticulum with the thread held loosely. The thread is then tightened, and the probe is elevated from the bottom of the œsophageal pouch to the level of the true œsophageal opening, and then pushed down into the stomach, thus measuring the depth of the diverticulum.

On the posterior wall of the œsophagus, about the level of the cricoid cartilage, there is found a weak space where the mucosa may be pushed out from within, and once the sacculation is formed, the tendency is for it to increase in size. Eventually the sac becomes a prolongation of the proximal gullet, while the opening of the lower œsophagus is found on the anterior wall of the sac.

When the sac is small, extirpation at one operation effects a cure. Operation in two stages is preferred for large sacs extending into the mediastinum. Invagination of the sac into the œsophagus is not recommended.

In the second important group, twenty-seven cases have been observed in the same clinic, the series including two cases of diverticulitis of the rectum and one of the anal ring. The latter is, possibly, the cause of certain cases of perirectal abscess which open

near the anus on the skin and fail to become cured after repeated operations, owing to the preservation of the mucous lining through the high internal opening of the fistula.

Diverticula in the large bowel, in many cases, originate at the site of vessels passing into the bowel on the mesentery or at the site of the epiploic tags, and a congenital local defect with pressure in early life probably has considerable influence on their development. The circular muscle fibres give way first; later, the longitudinal. The symptoms are due chiefly to a peridiverticulitis which leads to the development of a mass of tissue at the site of the diverticulum. The condition is to be differentiated from tuberculosis, cancer, syphilis, and left-sided appendicitis. In a majority of cases the condition is considered malignant. In seven out of the twenty-seven cases, cancer was found grafted on the original lesion.

The treatment consists in removing the tumour mass with the reestablishment of the intestinal tract. Anastomosis of the small bowel into the large is probably the safest procedure, or the operation may be made in a two-stage Mikulicz method. Bloodgood's method of side-to-side, ends-together anastomosis, with the ends of the stump brought into the incision beneath the skin as a safety valve to be opened if desired, is recommended. The mortality from operation approximates ten per cent.

THE corner-stone of the new wing of the Victoria Jubilee Hospital at Revelstoke, British Columbia, was laid on Wednesday, August 21st, by the Hon. Thomas Taylor, minister of public works. The hospital was first established in 1901, the corner-stone being laid by Lady Minto; and four thousand dollars towards its cost was then contributed by the government. Last year a new fire-proof wing was added, and the fact that it is now necessary to build an additional wing is striking evidence of the work that is being accomplished by the hospital. The new wing, it is estimated, will cost about one hundred thousand dollars, and one half of this amount will be contributed by the province. The need for enlargement is easily understood when one remembers that the hospital receives patients from a radius of over one hundred miles, and that within this area are numerous lumber mills and railway construction camps, from which the employees are regularly treated at the hospital. The new wing is to consist of three storeys and will provide thirty-three additional beds, as well as operating rooms and demonstration rooms.

Obituary

DR. JAMES P. McINERNEY, of St. John, N.B., died August 8th. Dr. McInerney was the son of the Hon. Owen McInerney and was born at Rexton, Kent, in 1859. He graduated from McGill in 1884 and soon afterwards went to St. John, where he entered upon his professional career. Dr. McInerney was an able and successful physician and a keen politician, and, in 1908, became a member of the Legislative Assembly. Dr. McInerney leaves a widow and seven children.

DR. J. O. POITRAS, of Ste. Cunegonde, Quebec, died September 3rd, in the forty-eighth year of his age. Dr. Poitras was a graduate of Victoria College, Toronto, and for the past ten years had practised in Ste. Cunegonde, where he was well known and where he had endeared himself to all, but perhaps more especially to the poorer classes, among whom much of his work was done. Dr. Poitras leaves three daughters and two sons.

News

DR. HUGH MCCALLUM, of London, Ontario, was elected president of the Canadian Medical Association for the forthcoming year, at the Edmonton meeting.

DR. SMALL and Dr. Powell, of Ottawa, have been elected to represent the Canadian Medical Association on the board of the Victorian Order of Nurses.

THE Wellesley Hospital at Toronto was formally opened by H.R.H. the Duke of Connaught, August 27th.

SEVERAL cases of small-pox have been reported from Montreal. In one instance, three members of one family were found to be suffering from the disease, two other members having re-

cently recovered. None of these cases had been reported to the medical officer of health by the physician in charge of the case.

It is probable that a faculty of medicine will not be established in the British Columbia Provincial University for several years.

At a meeting which took place August 8th, it was decided that the North Vancouver Hospital should be maintained temporarily by the district council.

THE corner-stone of St. Paul's Hospital at New Westminster, British Columbia, was laid by Archbishop McNab, August 15th.

A BY-LAW has been submitted to the ratepayers of Kindersley, Saskatchewan, to provide one thousand dollars for the building and furnishing of a hospital.

DR. JOSEPH ISABELLE has been appointed medical officer of health for Hull, Quebec, at a salary of five hundred dollars a year.

SOME alterations are being made to the east wing of the Victoria Hospital at London, Ontario.

SEVERAL cases of infantile paralysis have occurred at Niagara Falls. Dr. J. A. Amyot and Dr. McClennan, of Toronto, are investigating the outbreak.

THE formal opening of the new municipal hospital which has been established at Macleod, Alberta, took place August 14th.

FREE vaccination against typhoid is now being conducted at the Moose Jaw General Hospital. During July only four cases of typhoid fever were reported; eleven cases of scarlet fever, two of diphtheria, and one of measles also occurred.

A NEW wing is to be added to the Prince Rupert Hospital.

THE old school at Stettler, Alberta, is to be used as a hospital. The Beulah Mission building, which has served the purpose for some time, is too small to meet the increasing demand for accommodation.

THE hospital at Humboldt, Saskatchewan, is almost completed. It has cost about thirty thousand dollars.

THE British Columbia Hospital at South Vancouver, which was opened at the beginning of the year, is to be enlarged. The addition will provide accommodation for fifty patients.

AN outbreak of small-pox is reported from Hamilton. The type of disease is mild and, so far, only a few cases have occurred.

THE tuberculosis hospital at Kingston is to be formally opened October 15th.

THE new Grey Nuns' Hospital at Regina is now ready for occupation. Whereas the old building could only receive twenty-six patients, the new hospital provides accommodation for eighty.

THE Nova Scotia, New Brunswick, and British Columbia Medical Associations have been affiliated with the Canadian Medical Association.

AT a meeting of the Montreal city council on August 19th, it was resolved that the board of commissioners be requested to have the more important clauses of the health laws printed in Greek, Hebrew, Italian, French, and English, and that copies of these clauses in the various languages be distributed gratuitously. If this is done, the foreign element of Montreal will be able to understand more perfectly the sanitary laws of the city and will no longer be able to plead ignorance.

THE question of providing better protection from fire at the public hospital, St. John, N.B., is under consideration. It is suggested that iron balconies should be erected around each ward, and that a window in each of the wards should be cut down to the level of the floor in order to allow patients to be wheeled out on chairs. Such balconies would serve a double purpose, as patients could be wheeled on to them to get the benefit of the fresh air.

THE Vancouver Isolation Hospital is almost completed. The hospital is to consist of three buildings—the main building, which is one hundred and ten feet long and thirty-nine feet wide, is placed in the centre; the men's building is on the left of the main building,

while the building on the right contains the women's wards. Behind the main building is a level green sward where tents may be pitched, if found necessary, in case of a severe epidemic. Two other smaller buildings are also provided, one for men and one for women, where suspected cases may be kept under observation. The hospital grounds extend over twelve acres, and it is proposed to raise all the vegetables and farm produce for the hospital within its own grounds, and to employ convalescent patients in the gardens.

An arrangement whereby patients may see their friends and still avoid all danger of infection, has been planned. A large plate glass window has been placed in the lodge of the hospital, through this window patients may be seen by their friends, and a short distance telephone is to be installed so that a conversation may be carried on with the person on the other side of the glass. In this way the feeling that one is completely cut off from the world will be lessened, and the friends of the patient will have the satisfaction of both seeing him and speaking to him.

DURING the month of June six hundred and sixty-seven patients received treatment at the Vancouver General Hospital.

It is probable that the Sisters of Providence will build a hospital at Lachine, Quebec. However, no definite plans have been made as yet.

DR. BRUCE has given up his position as medical superintendent of the Byron Sanitarium for Consumptives and intends to return to England to take charge of a sanitarium near London.

MONTREAL has been divided into nineteen districts, each of which is in charge of a physician whose duty it is to examine the children attending school in that district. Each child is to be carefully examined, as to its physical condition, at least twice before the schools close for the Christmas vacation.

SEVERAL cases of small-pox have occurred at Les Eboulements, Quebec.

THE plans have been prepared and the excavation work has been begun for the new hospital buildings at Saskatoon. Four buildings are to be erected,—the general hospital, the nurses' home, the service building, and the contagious hospital.

At the recent meeting of the Saskatchewan Medical Association, Dr. Seymour, commissioner of public health at Regina, stated that the Dominion government had granted the sum of sixty thousand dollars for the work on tuberculosis in the province of Saskatchewan, on the condition that the people of that province subscribed fifteen thousand dollars for the same purpose.

DR. R. T. RUTHERFORD, of Strathclair, Manitoba, has been appointed medical inspector of immigrants coming to Canada by way of New York.

THE daily bacteriological examination of tap water, together with adequate filtration and chlorination, has resulted in a decrease of typhoid fever in Toronto this year. The following are the figures for July and August in 1911 and 1912.

	July.	August.	July.	August.
Number of cases.....	35	90	20	47
Number of deaths.....	3	14	1	5

A considerable percentage of the 1912 cases have been found to have had their origin in points outside the city.

DR. HODGETTS, the medical adviser to the Dominion Conservation Commission, has been temporarily appointed as medical officer of health for Ottawa until Dr. Shirreff is able to resume his duties.

THE new hospital at Smith's Falls, Ontario, is almost completed and will be opened very shortly.

THE construction of the St. Paul's Hospital at Vancouver is progressing rapidly. The estimated cost of the building, when completed, is about four hundred thousand dollars. The hospital will be provided with a splendid roof garden and will give accommodation for one hundred and fifty patients in addition to the fever wards. In designing the building, provision has been made for enlargement, should additional accommodation be required.

It is proposed to reorganize the municipal department of public health of Regina, and Dr. M. B. Bow, the medical officer of health, has prepared a report for consideration by the board. It is suggested that the department be divided into the following branches, each of which shall have an inspector: dairies; foods, fruits, etc.;

property and plumbing; nuisances, infectious and contagious diseases; and scavenging.

THE sum of fifteen thousand dollars has been granted by the city to the Vancouver General Hospital in order that the outstanding debts incurred by the hospital may be paid.

It is intended to erect a hospital at Port Alberni, British Columbia. The name of the hospital is to be the West Coast General Hospital.

A MATERNITY hospital has recently been opened at High River, Alberta.

At a meeting of the Strathroy town council on September 3rd, the sum of five hundred dollars was granted to the hospital in compliance with the request of the hospital board.

DR. C. M. STAFFORD has been appointed as bacteriologist and superintendent of the laboratory department of the Saskatoon Board of Health. Dr. Stafford, who is a Canadian, is a graduate of the Detroit College of Medicine, and has practised in Detroit for some years. He has recently been engaged in research work in the biological department of the Parke, Davis Company.

THE new health act requires that the board of health of each town shall consist of the mayor, the medical officer of health, and one resident, who shall be appointed by the town council; that the board shall meet quarterly; and that weekly reports as to the existing health conditions shall be submitted to the provincial board of health.

A SLIGHT epidemic of typhoid fever has been reported from Bradford, Ontario.

AN open-air school has been inaugurated in Toronto. It is hoped that, by next spring, arrangements will have been made for a permanent system of open-air school work on a fairly large scale.

ARRANGEMENTS are being made to extend the Chipman Memorial Hospital at St. Stephen, New Brunswick.

DR. A. C. CAMPBELL, of St. Thomas, has been elected president of the St. Thomas and Elgin Medical Society for the forthcoming year. Dr. Perry O. King, of St. Thomas, is the secretary.

THE third annual meeting of the American Association for the Study and Prevention of Infant Mortality will be held at Cleveland, Ohio, from October 2nd to October 5th.

It is probable that a municipal hospital will be established at Yorkton, Saskatchewan. The question is now under consideration by the town council.

DR. FREDERICK ADAMS has been appointed as epidemiologist for Toronto. Dr. Adams is a graduate of Toronto and for some time past has been assisting Dr. Nasmith, of the Toronto Board of Health.

INTERNATIONAL CONGRESS OF MEDICINE, LONDON, 1913

PREPARATIONS for the seventeenth International Congress of Medicine, which is to be held next year in London, England, are going forward rapidly. A circular has recently been issued by the honorary secretary, requesting that all those intending to present papers at the congress should notify him by February 28th, 1913, giving at the same time a short abstract of their paper. In this way a synopsis of the papers to be read will be prepared by official "reporters," and these will be translated into the various languages and published in the medical journals before the congress meets. Those taking part in the congress will thus come well prepared to participate in the discussions. We would urge upon Canadians the necessity of doing their fair share to make the congress a success.

It is with pleasure we announce that Dr. T. G. Roddick, of Montreal, emeritus professor of surgery, McGill University, has been appointed a vice-president of the congress.

The Canadian national committee, as at present constituted, is as follows: W. H. B. Aikins, Toronto; A. McPhedran, Toronto; G. E. Armstrong, Montreal; T. G. Roddick, Montreal; H. A. McCallum, London; H. G. McKid, Calgary; Jasper Halpenny, Winnipeg; C. K. Clarke, dean of the medical faculty, University of Toronto; J. C. Connell, dean of the medical faculty, Queen's University; H. H. Chown, dean of the medical faculty, Manitoba University; E. P. Lachapelle, dean of the medical faculty, Laval

University; F. J. Shepherd, dean of the medical faculty, McGill University; and representatives of the Canadian medical press: Geo. Elliott, *Dominion Medical Monthly*; John Ferguson, *Canada Lancet*; George O. Hughes, *Western Canada Medical Journal*; A. Macphail, *CANADIAN MEDICAL ASSOCIATION JOURNAL*; Harry Morell, *Western Medical News*; Adam H. Wright, *Canadian Practitioner and Review*; W. A. Young, *Canadian Journal of Medicine and Surgery*.

The honorary general secretary is Dr. W. P. Herringham, and any communications in regard to the reading of papers should be addressed to him at the central office of the congress, 13 Hinde Street, London W., England.

Canadian Literature

ORIGINAL COMMUNICATIONS

Dominion Medical Monthly, September, 1912:

- On the mononuclear cells of the blood. . . O. C. Gruner.
 A medical sermon—De Rebus . . . J. S. Sprague.
 Method of the study of direct or specific
 drug action Finley Ellingwood.
 Congenital absence of the femur: Report of
 five cases B. E. McKenzie.

The Canadian Journal of Medicine and Surgery, September, 1912:

- Symptoms and diagnosis of extra-uterine
 pregnancy A. Belcham Keyes.
 Aetiology and pathology of exophthalmic
 goitre W. T. Connell.
 Lactation and breast-feeding G. S. Strathy.

The Public Health Journal, August, 1912:

- The medical inspection of immigrants . . C. A. Bailey.
 Rehousing in Canada W. D. Lighthall.
 The influence of dosage on the reaction to the
 tubercle bacillus R. J. Ewart.
 False starts in municipal sanitation . . A. C. D. Blanchard.

- The statistics of housing and co-partnership schemes Percy E. Nobbs.
 Psychrophylic organisms in water Joseph Race.

***The Western Medical News*, June, 1912:**

- Urine in its pathological relation to acute febrile disease R. S. Klein.
 The indications for and technique of abdominal Cæsarean section and analysis of one hundred cases Ross McPherson.

***The Western Medical News*, July, 1912:**

- Some notes on the organization and working of a cavalry field ambulance F. L. Vaux.
 Simple method of gastric analysis Robert A. Rose.

***Le Montréal Médical*, July, 1912:**

- Statistique du cancer J. Bertillon.
 La tuberculose et le lait L. Panisset.
 Les hémorroïdes et leur traitement chirurgical Professor Quenu.
 Scorbut infantile du début Professor Broca.
 L'ectopie du testicule Professor Kirmisson.

***Le Montréal Médical*, August, 1912:**

- Néphrite urémigène Dr. Castaigne.
 Etat actuel de la vaccinothérapie A. Maute.
 Considération scientifique et philosophique à propos de la délimination clinique du tabes N. P.

***L'Union Médicale du Canada*, August, 1912:**

- L'obstruction des voies biliaires A. Marien.

***Le Journal de Médecine et de Chirurgie*, August, 1912:**

- Méningite séreuse, œdème papillaire, et poly-névrite multiple des nerfs craniens chez un jeune fumeur alcoolique J. N. Roy.
 Balle de revolver au chiasma J. N. Roy.

***The Canadian Practitioner and Review*, August, 1912:**

- Hyperthyroidism—its treatment W. J. Macdonald.

Medical Societies

BRITISH COLUMBIA MEDICAL ASSOCIATION

THE thirteenth annual meeting of the British Columbia Medical Association was held in Victoria, August 20th and 21st.

Among the visitors present were: Drs. J. W. Good and J. Halpenny, of Winnipeg; Dr. H. Meek, of London, Ontario; Dr. Musgrove, of Washington; Dr. Schwalm, of Rivers, Manitoba.

A very interesting programme was presented as follows:

[GENERAL MEETING—Tuesday, 10⁷a.m.

1. Registration of members; 2. Reading of minutes; 3. Introduction of visitors; 4. Reports of committees; 5. General business.

Tuesday, 10.30 a.m.

1. "The early recognition of gastric carcinoma," Dr. J. A. McArthur, Victoria. Discussion opened by Dr. O. M. Jones, Victoria.

2. "Some abdominal conditions simulating recurring attacks of appendicitis," Dr. H. E. Ridgewood, Victoria. Discussion opened by Dr. Fraser, Victoria.

3. "The solid carbon dioxide treatment of nævus," Dr. E. A. Smith, Vancouver. Abstract—Impressions gathered from the treatment of fifty cases of nævus, mostly in young children, with solid carbon dioxide. Demonstration of instruments employed. Discussion opened by Dr. H. C. Lindsay, Vancouver.

4. "Some unusual types of abnormal development of the pelvic organs," Dr. Ernest Hall, Victoria, British Columbia. Abstract—(1) Septate uterus; (2) Pseudo-hermaphroditism, treatment of; (3) Double uterus, treatment of. Discussion opened by Dr. Dallas Perry, Vancouver.

5. "Diagnosis of smallpox," Fleet Surgeon W. E. Home, Victoria. Discussion opened by Dr. F. T. Underhill, Vancouver.

Tuesday, 2.30 p.m.

1. "Can we lessen the failures of vaccine treatment?" Dr. C. B. McKee, Vancouver. Discussion.

2. "The value of bismuth in the diagnosis of surgical diseases of the abdomen," Dr. H. W. Riggs, Vancouver. Abstract—(1) (a) Stomach, normal form and position; (b) Anatomical changes and mortality changes; (c) Diagnosis of ulcer and cancer; (2) Duodenum, ulcer and stricture; (3) Intestines, adhesions and growths. Discussion opened by Dr. H. R. Nelson, Victoria.

3. "The diagnostic significance of gait," Dr. Frederick Brodie, Vancouver. Abstract—(1) Mechanism of locomotion; (2) Classification of gait; (3) Grouping of the various diseases affecting gait through a study of morbid anatomy. Discussion opened by Dr. Geo. Hall, Victoria.

4. "Observations on operative treatment of fractures," Dr. Jas. A. Gillespie, Vancouver. Abstract—(1) Summary of observations and experiences regarding the open method of treatment of simple and compound fractures based largely on cases treated in the Cumberland Hospital during the last ten years; (2) Factors which determine when case is operative; (3) Time to operate. Technique, necessity of strictest asepsis; (4) Fixation methods. Rule to leave the smallest amount of foreign material in wound. (5) Results. Time of union. Non-union. Infection. Conclusions. Discussion opened by Dr. R. E. McKechnie, Vancouver.

Tuesday, 8 p.m.

1. "The thyroid and parathyroid problem," Dr. J. Halpenny, Winnipeg. Discussion opened by Dr. E. McKechnie, Vancouver.

2. "Exophthalmic goitre with delusions," a report on two cases with operation, Dr. H. Robertson, Victoria. Discussion opened by Dr. G. H. Manchester, New Westminster.

3. "Radium-therapy," Dr. F. L. de Verteuil, Vancouver. Abstract—(1) Methods of application. (a) Varnish apparatus (with demonstrations); (b) Radium water; (c) Radio-active earth; (2) Cases treated by radium (lantern slide demonstrations). Discussion opened by Dr. H. R. Nelson, Victoria.

Wednesday, a.m.

No session held, in order to permit of members attending first convocation of the University of British Columbia at South Park School at 10 a.m.

Wednesday, 2 p.m.

1. Presidential address, Dr. J. D. Helmcken, Victoria.

2. "The penalties of delayed diagnosis of urinary diseases,"

Dr. G. S. Gordon, Vancouver. Abstract—Gonococcus infection, colon infection, staphylococcus infection, proteus infection, tubercular infection, papillomata, cancer, hypernephromata (so-called), catculi, prostatic adenomata, results of early and late treatment. Discussion opened by Dr. J. A. Campbell, Vancouver, followed by Dr. A. W. Hunter, Vancouver, and Dr. H. Robertson, Victoria.

3. "Tubercular peritonitis," Dr. G. E. Seldon, Vancouver. Discussion opened by Dr. J. W. McIntosh, Vancouver.

4. "Some observations on appendicitis," Dr. R. V. Dolbey, Vancouver. Abstract—(1) Increase in appendicitis in the last five decades; (2) Causes lying in the essential change in the nation's diet during that period; (3) Influence of pressed, canned and chilled food; (4) Significance of fermentation in the colon, directly attributable to bacterial flora in the large intestine; (5) The essential factors in diagnosis; (6) Accepted methods of treatment. Discussion opened by Dr. H. E. Ridewood, Victoria.

1. General business; 2. Report of secretary and treasurer; 3. Reports of standing and special committees; 4. Election of officers; 5. New business.

On account of the unavoidable absence of Dr. J. D. Helmcken, the president, the Hon. Dr. H. E. Young, a graduate in medicine of McGill and minister of education for British Columbia, very kindly consented to address the gathering. Dr. Young has always taken a deep interest in the welfare of the medical profession and his remarks were listened to with much pleasure.

The election of officers resulted as follows: president, Dr. A. S. Monro, Vancouver; vice-president, Dr. Hermann Robertson, Victoria; treasurer, Dr. P. A. McLennan, Vancouver; secretary, Dr. J. W. McIntosh, Vancouver. Executive committee: Dr. H. E. Ridewood, Victoria; Dr. H. W. Riggs, Vancouver; Dr. G. H. Manchester, New Westminster.

The association will meet in 1913 at Vancouver.

SASKATCHEWAN MEDICAL ASSOCIATION

THE sixth annual meeting of the Saskatchewan Medical Association was held in the Y.M.C.A. at Moose Jaw from September 3rd to September 5th last. After the address of welcome, delivered by Alderman Pope, the acting mayor, the members present

were duly registered and a short address was given by the president, Dr. Radcliffe. The reports of the various committees were then read, and these were followed by the report of the secretary, Dr. Wilson, of Regina. During the discussion which followed the presidential address, a resolution was passed making Dr. Roddick an honorary member of the Saskatchewan Medical Association and expressing the thanks of the association to Dr. Roddick for his interest in bringing about the formation of the Dominion Council.

On Wednesday, September 4th, the following papers were read: "Reporting of infectious diseases," by Dr. M. M. Seymour, commissioner of public health; address in surgery: "Some of the advances in surgery during the past quarter of a century," by Dr. Mundell, of Queen's University; "A visit to some of the European hospitals and clinics," by Dr. A. Croll, of Saskatoon; "Hygiene of youth," by Dr. V. E. Black, of Moose Jaw; "The difficulties of minor surgery," by Dr. B. Bayley, of Moose Jaw; "Pulmonary tuberculosis: some practical points in early diagnosis," by Dr. Wm. M. Hart; Address in preventive medicine, by Dr. T. A. Starkey, of McGill University; "Typhoid vaccination: exhibit of charts," by Dr. C. M. Sutherland, of Moose Jaw.

Thursday's programme commenced with a clinic at the Moose Jaw General Hospital, and this was followed by Dr. T. A. F. Corbett's paper on the treatment of syphilis. In the afternoon the following papers were read: "A few rambling remarks about obstetrics," by Dr. J. W. Turnbull, of Regina; and "Remarks about trachoma," by Dr. C. W. Bishop, of Regina.

On Tuesday evening the members of the association attended a performance of "Sweet Lavender," and on Wednesday evening a banquet was given in the Royal George Hotel.

The election of officers for the forthcoming year resulted as follows: honorary president, Dr. Radcliffe, of Moose Jaw; president, Dr. Low, of Regina; first vice-president, Dr. Peterson, of Saskatoon; second vice-president, Dr. R. H. Smith, of Moose Jaw; secretary, Dr. Arthur Wilson; executive council, Dr. Gorrel, of Regina, Dr. Monroe, of Saskatoon, and Dr. Leask, of Moose Jaw. The next annual meeting will be held at Regina.

It was recommended that, in future, the meetings of the association should be held in turn at Regina, Saskatoon, and Moose Jaw, as these are the three central cities of the province.